

THE PATTERN OF NON THYROIDAL
NECK SWELLINGS IN TIRUNELVELI
MEDICAL COLLEGE HOSPITAL.

*DISSERTATION SUBMITTED FOR M.S. GENERAL
SURGERY
DEGREE EXAMINATION*

*TIRUNELVELI MEDICAL COLLEGE HOSPITAL,
TIRUNELVELI.*

MARCH - 2009



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ACKNOWLEDGEMENT

I whole – heartedly thank with gratitude **THE DEAN**, Tirunelveli Medical College, Tirunelveli for having permitted me to carry out this study at the Tirunelveli Medical College Hospital.

My special thanks goes to **Prof. Dr. Jeyakumar Sagayam, M.S.**, my Chief, Professor and Head, Department of Surgery, Tirunelveli Medical College, for his guidance throughout the period of my study. I am grateful to **Prof. Dr. Thangaiah, M.S.**, **Prof. Dr. Paulus D. Prakash, M.S.**, **Prof. Dr. A. Chidambaram, M.S.**, **Prof. Dr. Ravindaran, M.S.**, **Prof. Parimalam M.S.**, **Prof. Dr. Balaji, M.S.**, and **Prof. Dr. Janakiraman, M.S.**, for their immense help and guidance. I thank all the professors of the department of Radiology, Pathology and department of Oncology for their kind co – operation extended in carrying out the various investigations.

I am grateful for the guidance and encouragement of my Assistant Professors, **Dr. Sreethar, M.S.**, **Dr. Kamalinviji, M.S.**, **Dr. Rakesh Fernando, M.S.**, **Dr. Sivanupandian, M.S.**, **Dr. Irene Aruna Edwin, M.S.**, and other assistant professors.

I sincerely acknowledge the help and assistance rendered by my fellow postgraduates. Last but not the least; I thank all the patients for their kind co – operation in carrying out the study successfully.

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INTRODUCTION

The head and neck is an intricate anatomical region and many of its structures have highly complex and important physiological function. Of the numerous afflictions of this area, those of particular interest to the General surgeon are congenital, developmental, inflammatory and neoplastic lesions. This study is focussed on regional swellings of the neck and the thyroid swellings are excluded.

Several classifications have been proposed to enable a comprehensive differential diagnosis of neck swellings.

The age group of the patient is a crucial factor, that should be taken into consideration. Younger patients tend to present with inflammatory or congenital swelling. In case of swellings present in individuals above the age of forty, on the other hand, malignancy of the head and neck, either a primary or secondary should be ruled out.

Approximately 30% of body's lymph nodes are located in the cervical region. As the lymphatic drainage of this zone is highly predictable, a cervical lymphnode can be helpful in the search for a primary malignancy.

AIM OF THE STUDY

The study was carried out in Tirunelveli Medical College Hospital on inpatients as well as patients attending the outpatient department. The following points were set out to be considered.

1. To study the epidemiology of nonthyroidal neck swellings.
2. To present a histopathological study of nonthyroidal neck swellings.
3. To show the frequency of cervical node involvement in Malignancy.
4. To show the incidence of secondaries neck with unknown primary.
5. To study the accuracy of FNAC.

MATERIALS AND METHODS

The analysis is a prospective study of Nonthyroidal neck swellings diagnosed and treated at Tirunelveli Medical College Hospital during the period from July 2006 to October 2008. All histologically proven benign, malignant, congenital and inflammatory non thyroidal neck swellings are included in the study. The age group of patients is above twelve years. The study includes 125 cases of nonthyroidal neck swellings.

A thorough clinical examination was carried out and physical findings were recorded in detail. Patients with thyroid swellings and infective neck masses are excluded in this study. The following investigations were carried out.

Blood : Haemoglobin

 Total count, Differential count, ESR

Blood : Sugar

 Urea

 Creatinine.

Urine : Albumin, Sugar, deposits

Chest X – ray

X ray of adjacent bone involved.

Ultrasonogram of the abdomen and pelvis.

CT Scan neck

CT scan Thorax

FNAC of the neck lump

Biopsy if FNAC is inconclusive.

TRIPLE ENDOSCOPY (PANENDOSCOPY):

Indirect and Direct laryngoscopy

Upper GI Endoscopy

Bronchoscopy.

Mantoux test (PPD test)

Serum IgM titre for tuberculosis.

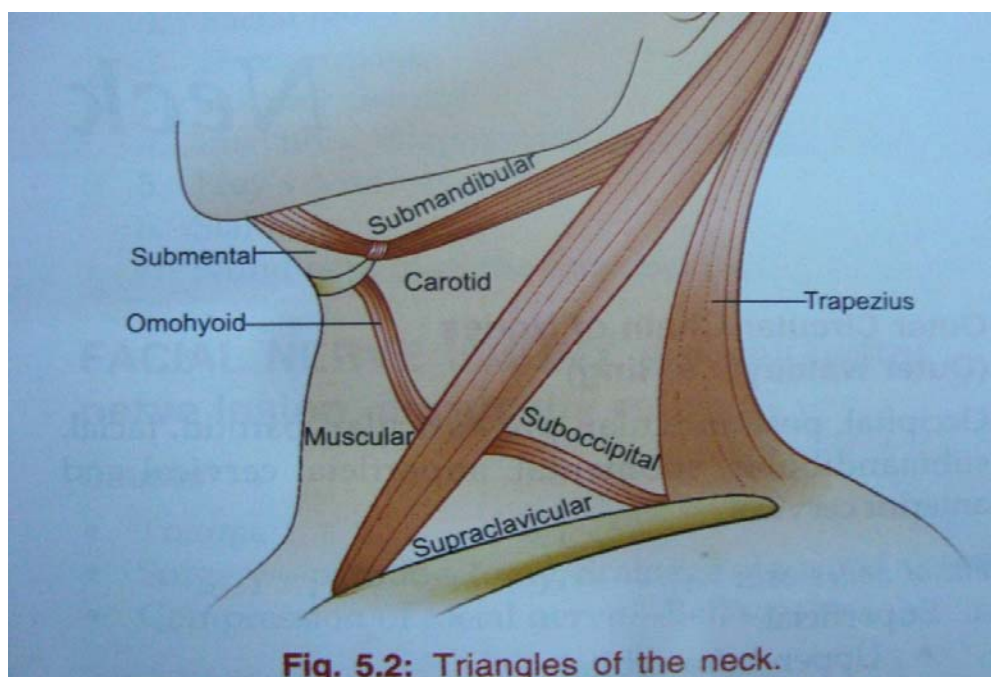
In many instances, even a through clinical examination is insufficient to provide the clinician with enough information to establish a diagnosis and additional tests are required.

Immunological and serological tests like Kviem's test ,EBV titres. Anti capsid antibody, S.Immunoglobulin.A are not available at our Institution.

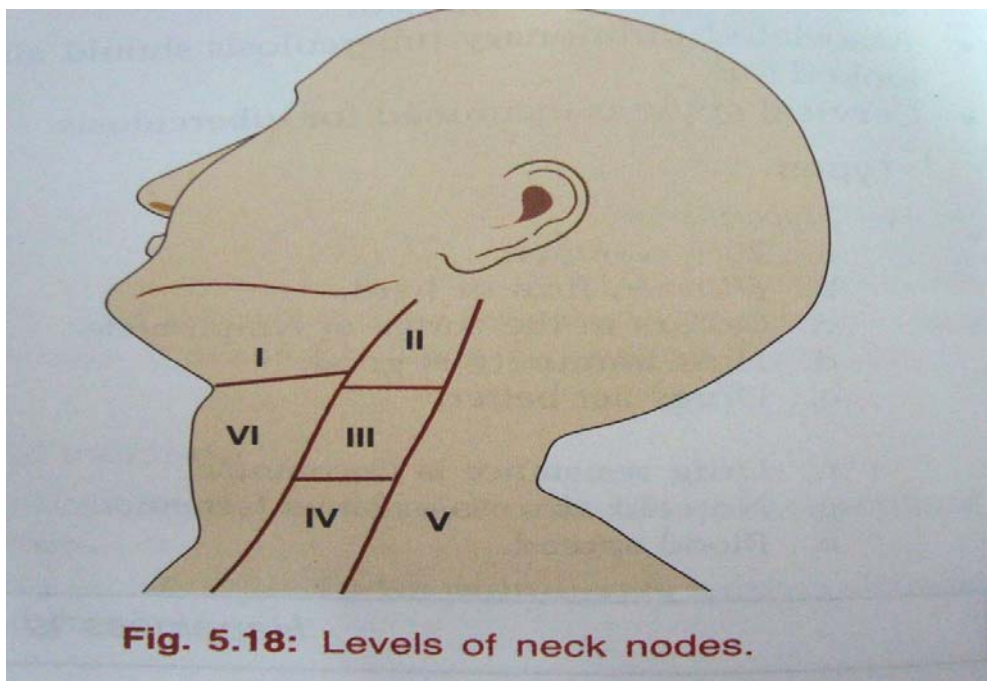
Immunohistochemistry and tumour marker assay for secondaries with unknown primary are also unavailable.

A proforma was prepared to record the details of Non thyroidal neck swellings. (enclosed).

TRIANGLES OF THE NECK



LEVELS OF LYMPH NODES



SURGICAL ANATOMY OF THE NECK

A clear understanding of the anatomy of Neck is essential to appreciate the symptomatology caused by the diseases in this area and to facilitate surgical procedure.

EMBRYOGENESIS OF THE NECK

(SKANDALAKIS J.E SURGICAL ANATOMY)

By 5th week of embryogenesis prominent branchial arches mark the site of the neck. By seventh week, the Branchial arches are reduced, a constriction appears between head and thorax.

By twelfth week onwards, the true neck is present.

TOPOGRAPHIC ANATOMY OF THE NECK

Each side of the neck is a Quadrilateral space sub divided by sternocleidomastoid muscle into Anterior and posterior Triangle. They are again subdivided into smaller triangular regions.

ANTERIOR CERVICAL TRIANGLE

BOUNDARIES

Lateral	-	Sternocleidomastoid muscle
Superior	-	Inferior border of the Mandible
Medial	-	Anterior Midline of the neck.

This large triangle may be subdivided into four more triangles by the digastric and omohyoid muscles.

Submandibular triangle

Carotid triangle

Muscular triangle

Submental triangle

Submandibular triangle

Boundaries

Superior – Inferior border of the mandible

Inferior – Anterior and posterior belly of Digastric Muscle

Floor – Mylohyoid Muscle.

CONTENTS

I Surgical Plane : Skin, superficial fascia enclosing the platysma ,muscle and fat.

Mandibular and cervical branches of Facial N.

II Surgical plane : Superficial to deep.

Superficial portion of submandibular gland

Part of Facial Artery and Vein

Submental branch of facial Artery

Lymphnodes

III. Surgical plane : Superficial to deep.

Mylohyoid muscle

Hyoglossus Muscle

Middle constrictor muscle

Styloglossus Muscle

IV. Surgical plane

Deep portion of the submandibular gland , the submandibular duct
(Wharton's duct)

Lingual N

Sublingual gland.

Hypoglossal nerve.

Submental Triangle

Boundaries

Lateral – Anterior belly of Digastric muscle

Inferior – Hyoid bone

Medial – Midline

Floor – Mylohyoid muscle

Roof – Skin and superficial fascia

Contents – Lymphnodes.

Carotid Triangle

Boundaries

Anterior – Superior belly of omohyoid

Posterior – Sternocleidomastoid muscle

Superior – Posterior belly of Digastric Muscle

Floor - Hyoglossus Muscle, inferior constrictors of the pharynx

Roof – Investing layer of deep cervical fascia.

Contents

Carotid Artery Bifurcation

Internal carotid A

External carotid A and its Branches

Internal jugular vein and its tributaries

Vagus nerve

Spinal accessory nerve

Hypoglossal N

Ansa Hypoglossi

Cervical sympathetic trunks.

MUSCULAR TRIANGLE

Boundaries

Superolateral	–	Superior belly of omohyoid Muscle
Infero lateral	–	Sternocleido mastoid muscle
Medial	–	Midline of the neck
Floor	–	Prevertebral fascia and prevertebral muscles. Sternohyoid and Sternothyroid muscles
Roof	–	Investing layer of deep fascia.

Contents : Thyroid and parathyroid glands.

Trachea, Esophagus

Sympathetic Nerve trunk

POSTERIOR CERVICAL TRIANGLE

Boundaries

Anterior	:	Sternocleido mastoid Muscle
Posterior	:	Anterior border of Trapezeius Muscle
Inferior	:	Clavicle
Roof	:	Superficial investing layer of deep cervical fascia.
Floor	:	Prevertebral fascia and muscles.

Contents : Accessory Nerve

Subclavian. Artery and vein

Cervical plexus

Phrenic nerve

Lymphnodes

Posterior triangle may be divided into two smaller triangles by the Omohyoid

Muscle Inferior belly.

1. Occipital triangle.
2. Subclavian triangle

FASCIA OF THE NECK

The facial planes of the neck provides boundaries that are clinically applicable because they may determine the pathway of spread of Infection.

Superficial fascia

Deep fascia.

Deep fascia has three layers:

- Investing layer (Superficial layer)
- Middle or pretracheal layer (Surrounding the larynx , trachea and pharynx)
- Prevertebral layer (Posterior or deep layer)

SUPERFICIAL FASCIA

It includes connective tissue, fat, platysma muscle, cutaneous branches of the cervical plexes, cervicofacial division of facial nerve and small cutaneous veins.

DEEP FASCIA

INVESTING LAYER

It envelops two muscles – the trapezius and sternocleidomastoid - two glands – the parotid and submandibular. It forms two spaces – the supraclavicular and the suprasternal and forms the roof of anterior and posterior triangles.

PRETRACHEAL FASCIA

Posterior layer of this fascia envelops the thyroid glands forming a false capsule of the gland. The layer is fixed to thyroid and cricoid cartilages to form the suspensory ligament of thyroid gland (ligament of Berry)

PREVERTIBRAL FASCIA

The fascia lies in front of the prevertebral muscles and covers it.

CAROTID SHEATH

The three fascia investing, pretracheal and prevertebral compose a fascial tube called the carotid sheath

Contents are Common carotid Artery, internal jugular vein, vagus nerve, deep cervical lymph nodes.

SPACES OF THE NECK

Spaces above the hyoid Bone

Peripharyngeal spaces, Retropharyngeal, Para pharyngeal, submandibular spaces.

Spaces below the Hyoid Bone

Visceral compartment of stiles

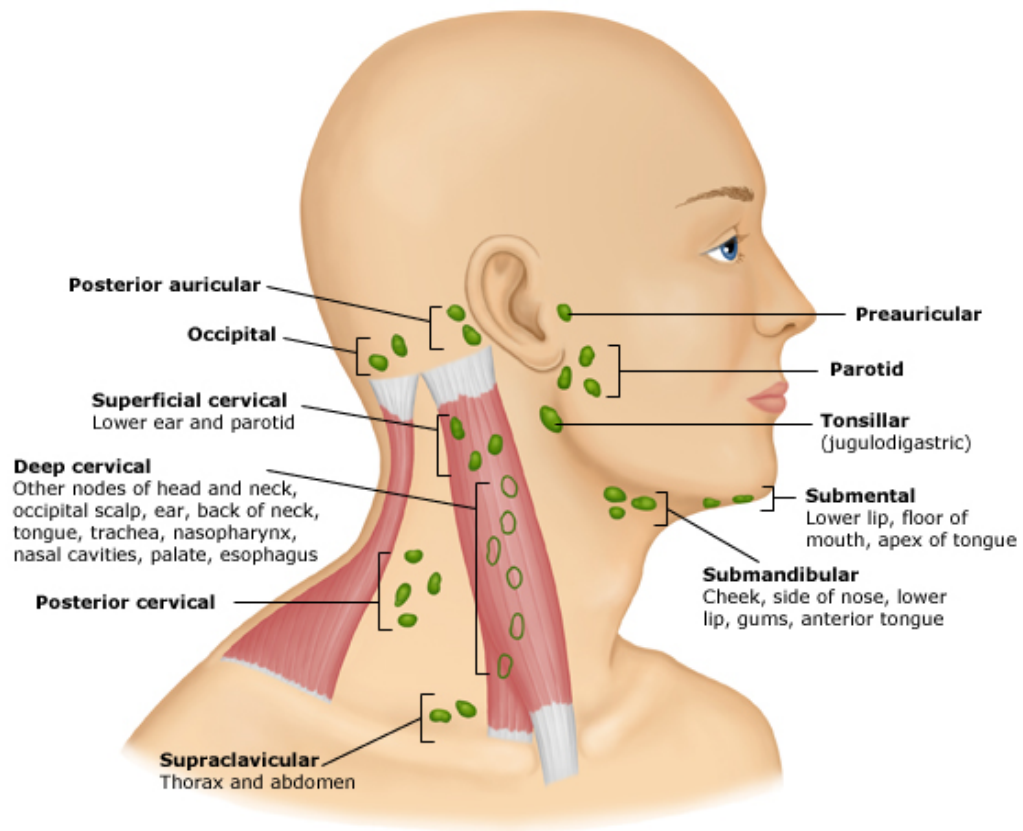
Carotid sheath

Space between prevertebral and alar fascia – (danger space of Grodinsky

Holyoke)

The Suprasternal space of burns.

LYMPHATIC DRAINAGE OF THE NECK



LYMPHNODES OF THE NECK (Ref: Lee McGregor's Synopsis of Surgical Anatomy)

Circular chain of nodes

Occipital

Posterior Auricular

Pre auricular

Parotid

Facial

Submandibular

Submental

Superficial cervical

Anterior cervical

OCCIPITAL NODES

One or two nodes situated midway between the mastoid process and the external occipital protuberance. They drain the back of the scalp.

POSTERIOR AURICULAR NODES

Situated on the Mastoid process behind the pinna. They drain the temporal region, back of pinna, external auditory meatus.

PREAURICULAR NODES

Situated immediately in front of the tragus, superficial to parotid fascia. It drains the outersurface of pinna and the side of the scalp

PAROTID NODES

Situated both within the substance of the parotid gland and deep to it. The nodes drain the nasopharynx, back of nose eyelids, front of scalp, external auditory meatus, tympanic cavity.

FACIAL NODES

Superficial group

Infra Orbital

Buccinator

Supramandibular

These nodes drain conjunctiva, eyelids, nose and cheek.

Deep Group

Drain the temporal fossa, infratemporal fossa, back of nose pharynx.

SUBMANDIBULAR NODES

Lies in the submandibular triangle in close relation to the submandibular salivary gland. These nodes drain the side of nose, inner angle of eye, cheek, angle of mouth, upperlip, outer part of lower lip, gums, side of tongue.

SUBMENTAL NODES

Lies in submental triangle. Drain central part of lip and floor of the mouth and apex of tongue.

SUPERFICIAL CERVICAL NODES

Lies on the outer surface of the sternocleidomastoid around the external jugular vein. They drain the parotid region and the lower part of the ear.

ANTERIOR CERVICAL NODES

These lie near the middle line of the neck in front of the larynx or trachea. They consists of

SUPERFICIAL SET

Lies in relation to anterior jugular vein and drain the skin of the neck.

DEEP SET

Infra hyoid nodes : They lie on the thyrohyoid membrane and drain the front of the larynx.

Prelaryngeal nodes : These lie on the Cricothyroid ligament and drain the larynx.

Pretracheal nodes : These lie in relation to the inferior thyroid veins in front of the trachea and drain the thyroid and trachea.

EFFERENT OF THE CIRCULAR CHAIN

The deep cervical chain receives all the lymph from the circular chain nodes.

VERTICAL CHAIN OF DEEP CERVICAL NODES

This consists of a number of large nodes lying in relation to the carotid sheath.

They are arbitrarily divided into superior deep cervical and inferior deep cervical groups by the point of bifurcation of carotid or omohyoid muscle. These nodes are in very intimate relationship with the Internal jugular vein.

Retropharyngeal nodes and paratracheal nodes belongs to this group of nodes.

Two of the deep cervical group are named *jugulodiagstric* – Main node of the Tonsil.

Juguloomohyoid – Situated on the common carotid just above the point where anterior belly of omohyoid crosses this vessel. Drain the tongue.

The deep cervical nodes receives lymph from the entire head and neck either directly or indirectly from the nodes of the circular chain.

The lymph from the deep cervical chain is collected into one trunk, the jugular lymph trunk. On right side it enters the junction of subclavian vein and internal jugular vein. On left side the trunk enters the thoracic duct.

LEVEL OF LYMPHNODES

Level I (Submental and Submandibular nodes)

To consists of lymphnodes within the submental and submandibular triangles.

Level II : Upper jugular chain.

Extends from the level of carotid bifurcation to the skull base.

Level II : Middle jugular group.

Extends from the carotid bifurcation to cricothyroid membrane .

Level IV: Lower jugular group

Extends from the cricothyroid notch to clavicle.

Level V : Posterior cervical triangle group.

Level VI : Anterior compartment group.

Pretracheal and prelaryngeal group.

Level VII : Lymphnodes in the Mediastinum.

REVIEW OF LITERATURE

The surgical pathology of Neck swellings varies from systemic disease to localized disease. Neck swellings may be classified as

1. Etiological classification;

Congenital

Inflammatory

Neoplastic

Others.

2. According to anatomical site

Midline swellings

Lateral swellings

3. According to Anatomical triangles that they occupy.

Description of thyroid pathology is not included in this study.

The human neck is designed such that the swelling of normal structure or the presence of an abnormal one is readily apparent.

Rule of 80 (Skandalakis Surgical Anatomy)

80 percent of

Non thyroid Masses are neoplastic

Neoplastic masses are in males

Neoplastic masses are malignant

Malignant masses are Metastatic

Metastatic masses are from primary sites above the clavicle.

Rule of 7

7 days	:	Inflammation
7 months	:	Neoplasm
7 years	:	Congenital defect

The rule of 80 and Rule of 7 is based on hospitalised patients with cervical lymphadenopathy.

Congenital swelling

Thyroglossal cyst

Branchial cleft cyst

Cystic Hygroma

Dermoid cyst

Teratoma

Thyroglossal cyst

Embryologically it is a remnant of the thyroglossal duct, an extension from the foramen caecum to the pyramidal lobe of the thyroid. The duct is largely obliterated except the terminal portion. A cyst can occur anywhere in the midline. Sometimes thyroid gland may not be present in the normal site but may be present on the walls of the thyroglossal cyst.

Possible sites of thyroglossal cyst :

Beneath foramen caecum

Floor of mouth

Suprahyoid

Subhyoid

On thyroid cartilage

At the level of Cricoid cartilage

Clinical features

Present as a soft cystic midline mass without adherence to the skin. As it contains lymphoid tissue, it is prone for infection. The commonest position being the subhyoid. Other situations include in the region of thyroid cartilage or above the hyoid bone. Classical differentiating features includes movement of the swelling on deglutition as well as on protrusion of the tongue.

Pathology

It contains lymphoid tissue and it is often infected. The cyst is lined by pseudostratified columnar epithelium. There may also be mucus glands or sometimes cholesterol crystals.

Complications

Infection

Fistula formation

Rarely – carcinomatous change (Papillary carcinoma)

(Chew f, Sheritum B, Wankervis)

Investigation

FNAC from the cyst

Radioisotope Study

USG neck

Treatment

Sistrunk's operation

Because the thyroglossal tract is so closely related to the body of hyoid bone, the central part must be excised, together with the cyst or fistula upwards towards the foramen caecum with a core of lingual muscle.

Branchial cyst

The neck and pharynx are formed from five branchial arches. The 2nd arch grows faster than the others and hence overgrows and overhangs the lower arches forming a groove. The overgrown 2nd arch fuses with the fifth arch. The cervical sinus is hence buried enclosing a squamous epithelium lined cavity termed branchial cyst.

Clinical features

The branchial cyst usually presents in the upper neck in early or middle adulthood and is found at the junction of upper third and middle third of sternocleidomastoid muscle at its anterior border. It is a fluctuant, non tender, mobile smooth swelling.

Ultrasound, fine needle aspiration both aid with diagnosis and the treatment is by complete excision.

The modern theory is that the cysts may arise as a result of branchial epithelium entrapped within a lymphnode.

Dermoid cyst

The lesion is derived from the remnants of epithelial cells and may contain skin, skin appendages hair and desquamated epithelium. It may be found anywhere from the floor of the mouth to the upper neck and is frequently located in the submental region. It is a congenital sequestration dermoid.

Clinical features

They are generally soft, painless mass, that do not move with protrusion of the tongue.

FNAC is diagnostic and complete excision is the treatment.

Lymphangioma

Lymphangiomas arise from sequestration of lymphatic tissue derived from the primitive lymph sacs which have lost connection with the main lymphatic system.

An alternative theory of origin suggest that they develop from endothelial membranes which arise from the walls of the cyst, penetrate surroundings tissue, canalize and then produce more cysts,.

Pathological Classification

Lymphangioma simplex –

Composed of thin walled capillary sized lymphatic channels.

Cavernous lymphangioma

Composed of dilated lymphatic spaces often with a fibrous adventitia.

Cystic hygroma

Cysts composed of cysts varying in size from few millimeters to several centimeters. Benign tumor of lymphatic origin sequestration of a portion of jugular lymph sac from the lymphatic system accounts for the appearance of these swellings.

About 5% present at the time of birth (Cuschieri et al) The remaining primarily present around the age of two.

Clinical features

This cystic swelling contains multiple loculi of clear lymph lined by a single layer of endothelium. The common site is in the posterior triangle.

The swelling is soft, partially compressible visibly increases in size when the child coughs or cries. It is brilliantly transilluminant. The cheek, axilla, groin, mediastinum are other although less frequent sites for a cystic hygroma.

Complications : Respiratory obstruction and infection.

Treatment

Complete excision of all lymphatic bearing tissues. A variety of different sclerosing agents injected into the lesion have been advocated over the years, most recently Picibanil (OK 432)

Inflammatory swellings

Most inflammatory swellings involve the upper deep cervical nodes. Etiology ranges from viral to bacterial to fungal to parasite.

Inflammatory:

Reactive Hyperplasia

Infective:

Viral

Infectious mononucleosis

HIV

Cat scratch disease.

Bacterial

Brucellosis

Streptococcus , Staphylococcus

Syphilis

Tuberculosis.

Fungal

Blastomycosis

Histoplasmosis

Coccidiomycosis

Protozoan

Toxoplasmosis

Cervical lymphadenitis

There are approximately 800 lymphnodes in the body with no fewer than 300 of them lying in the neck. Inflammation of the lymph nodes the neck is exceedingly common. Infection occurs from the oral and nasal cavities, pharynx,

larynx, ear, scalp and face. The source of the infection must be sought systematically.

Acute lymphadenitis

The affected lymphnodes, are enlarged and tender and there may be varying degrees of general constitutional disturbances of the patient with pyrexia, anorexia and general malaise. The treatment in the first instance is directed to the primary focus of infection for eg. tonsillitis or a dental abscess. surgical drainage may be required in Abscess.

Chronic lymphadenitis

Chronic, painless lymphadenopathy may be either tuberculosis in young children or adults, or due to secondary malignant metastasis, most commonly from a squamous cell carcinoma in older people. Lymphoma or HIV infection also present in cervical nodes in young adults. Careful inspection of the upper respiratory and food passages is essential to exclude primary malignancy of the nasopharynx, tonsil and base of tongue, Pyriform fossa or larynx. Fine needle aspiration of the enlarged cervical lymphnodes is initially preferable to any form of open biopsy.

Tuberculous lymphadenitis

Tuberculosis remains a problem throughout the world and is still a common cause of cervical lymphadenopathy in many developing countries.

The conditions most commonly affects children and young adults but can occur any age. The upper deep cervical lymphnodes are commonly affected but there may be a widespread cervical lymphadenitis.

In most cases the tuberculous bacilli gain entrance through the tonsil of the corresponding side as the lymphadenopathy. Both bovine and human tuberculosis may be responsible.

In approximately 80% of cases, the tuberculosis process is limited to the clinically affected group of lymphnodes, but a primary focus in the lungs must always be suspected and investigated.

The various stages of progress on tuberculous adenitis are

Stage of lymphadenitis

Stage of Peradenitis – Matting of Lymphnodes

Stage of cold Abscess – Caseation and Liquefaction.

Stage of collar stud abscess – It occurs deep to deep fascia and bursts through to become superficial.

Stage of discharging sinus.

Investigations

Complete haemogram –

ESR usually elevated.

FNAC of the lymphnode.

AFB smear – Microscopy and culture.

HIV screening

If FNAC is inconclusive, Open excision biopsy.

Chest X ray PA view to rule out pulmonary tuberculosis.

PCR

Mantoux test – Tuberculin Skin testing

Serology –ELISA - IgG And IgM for tuberculosis.

IGRAS – Interferon gamma release assays for Tuberculous specific antigen ESAT 6 and CFP10.

ELISA and ELISpot assay.

Treatment

Category III Regimen

2 HRZ + 4 HR – Thrice weekly.

Intensive phase – 2 months

Continuation phase – 4 months.

Isoniazid -300mg/day

Rifampicin -450 – 600mg/day

Pyrazinamide-1500mg/day .

Repeated aspiration and evacuation for Cold abscess.

Primary Tumors of the Neck

Benign Tumors

Benign masses of the neck may be enlargement of local structures or tumors like epidermal cyst, lipoma, hemangioma etc.

Neurogenous tumors

Chemodectoma (Carotid body tumor)

This is a rare tumor and a higher incidence is seen in areas where people live at high altitudes as a consequence of chronic hypoxia leading to carotid body hyperplasia. The tumors are most commonly present in the 5th decade and approximately 10% of patients have family history.

The tumors arise from the chemoreceptor cells on the medial side of the carotid bulb. The cells are not hormonally active and are usually benign.

Clinical features

Patients present with a slow growing painless mass in the region of carotid bifurcation. About 1/3 rd present with pharyngeal mass pushing tonsil medially and anteriorly. The mass is firm, rubbery, pulsatile, mobile from side to side only and with a bruit.

Investigations

FNAC and Biopsy are contraindicated. Carotid angiogram and MRI provides excellent details.

Doppler study of carotid arteries.

Treatment

Excision of tumour is the treatment of choice. Surgery is better avoided in elderly. Radiotherapy has no role. Resection and vein autograft for restoring the arterial continuity is other option in difficult conditions.

Vagal body tumors

Vagal para gangliomas arise from the nests of paraganglionic tissue of the vagus nerve just below the base of the skull near jugular foramen. They may also be found at various sites along the nerve down to the level of carotid artery bifurcation. They present as slow growing painless mass in the anterolateral aspect of the neck. Diagnosis is by CT and MRI.

Peripheral nerve Tumors

Schwannomas are solitary and encapsulated tumors attached to or surrounded by nerve and paralysis of the associated nerve is unusual. The vagus nerve is the most common site for these tumors.

Neurofibromas arise from schwann cells and may be a part of von Reckhlinghausen syndrome of multiple neurofibromatosis. 10% of tumors may undergo malignant change. These present as slow growing , painless neck mass.

Submandibular gland neoplasm

Tumors of submandibular salivary gland are uncommon and usually present as slow growing, painless swelling within the submandibular triangle. Only 50% of submandibular gland tumors are benign. In many instances the swelling cannot, on clinical examination, be differentiated from submandibular lymphadenopathy. The submandibular gland enlargement is bimanually palpable, they are slow growing, including malignant tumors. The most common benign tumour of the submandibular gland is pleomorphic adenoma and it is more common in females. Treatment is excision of the submandibular gland. Shelling out of the tumor is not recommended because of the risk of incomplete excision and tumor spillage which can lead to recurrences.

Enlargement of the submandibular gland can be caused by infection, due to obstruction of the duct by a calculus. The patients usually present with acute painful swelling in the region of submandibular gland precipitated by eating and resolves spontaneously within 1 -2 hrs after the meal. Clinical examination reveals an enlarged submandibular gland that is palpable on bimanual examination. There may be discharge of pus from sublingual papilla. This is due to chronic nonspecific bacterial infection secondary to salivary stasis and poor emptying of the gland.

INVESTIGATIONS :

Intraoral X Ray (Dental occlusion film) shows radio opaque stones.

FNAC of the gland to rule out other pathology.

Treatment :

For ductal stones – removal of the stone by incising the duct and leaving the duct open as suturing the duct may result in stricture .

For Intraglandular stone : Submandibular gland excision .

Malignant Neck swellings

Secondary Carcinoma

The malignancy of foremost significance in the neck region is the secondary carcinomatous involvement of the neck lymphnodes. Most carcinoma of Head and neck metastasize to the regional lymphnodes which act as a barrier to prevent further spread of the disease. A carcinoma of the head and neck is assigned a stage, which depends on not only the extend of the primary tumor and the presence of distant metastasis but also on enlargement of cervical lymphnodes.

The current classification suggested by UICC (International union against cancer) and AJC (American joint Committee) is shown in Tables.

AJC

- NX - Minimum requirements to assess the regional nodes cannot be met.
- NO - No clinically positive node.
- N1 - Single clinically positive homolateral node 3 cm or less in diameter.
- N2 - Single clinically positive homolateral node more than 3 cm but not more than 6 cm in diameter, or multiple clinically positive homolateral nodes, none more than 6 cm in diameter.
- N2a - Single clinically positive homolateral node more than 3 cm but not more than 6 cm in diameter.
- N2b - Multiple clinically positive homolateral node more than 3 cm but more than 6 cm in diameter.
- N3 - Massive homolateral node (s), bilateral nodes, or contralateral node (s)
- N3a - Clinically positive homolateral node(s), more than 6 cm in diameter.
- N3b - Bilateral clinically positive nodes (in this situation, each side of the neck, should be staged separately, i.e. N3b right, N2a, left, N1)
- N3c - Contralateral clinically positive node(s) only.

Cancer presenting with a neck node is mainly a disease of men (4:1 M :F) with a maximum age incidence of 56 in males and 55 in females (Sabiston...) Between one third and one half of all such nodes are replaced by squamous cell carcinoma, one quarter by undifferentiated or anaplastic carcinoma and similar proportion by Adenocarcinoma (if supraclavicular Lymphnodes are involved) followed by small number of miscellaneous tumors including melanoma ,Sarcoma and thyroid gland tumor.

In about 1 /3 rd of patients of primary tumor can be found by investigation at the time of presentation. The primary sites of involvement (in order of frequency) nasopharynx, tonsil, base of tongue, thyroid gland, supraglottis, larynx, floor of mouth, palate, pyriform fossa, bronchus, esophagus, breast, stomach and testes. All of these areas must be carefully assessed to search for the primary growth before considering biopsy or any surgery on the neck.

The occult Primary

In this case there exists a carcinomatous lymphnode in the neck with no evidence of primary tumor. According to crocker et al (1977) the primary site will become apparent in about 30% of cases and suprisingly 5 yr survival rate is as high as 48% have been recorded (Harper et al)

Cancer of unknown primary site represents 15% of new referrals in large hospital based oncology centers (Stenart et al 1979, Markaam 1982, Jordan & should 1985, Actman & Cadman 1986)

Relative frequency of Primary sites

Oropharynx	15%	Lung	20%
Nasopharynx	15%	GIT	10%
Thyroid	20%	Miscellaneous	10%
Hypopharynx	10%	distant site	

In developed countries typically 5.6% of all new cases of cancer present as cancer of unknown primary site. The incidence increases with age and is low below 40yr. It is the 3rd most common cancer presentation in females over 70 yrs of age.

The patients are typically male, aged between 50 and 70yrs and the tumor histology ie squamous cell carcinoma in 65 – 85% of cases (Burric et al 1970, Tesse et al 1973)

Cancer of Unknown primary (CUP)

CUP is a heterogeneous group that comprises 3% to 5% of new cancer diagnosis and can be difficult to evaluate and treat. (Anderson Surgical oncology)

CUP is defined by the presence of a biopsy proven cancer for which the anatomical origin of the primary tumor is not revealed after a thorough medical history and physical examination (including breast and pelvic examination in women and testicular, prostate examination in men) routine laboratory tests, chest X – Ray, CT of the abdomen and pelvis, mammography in women ,prostate specific antigen (PSA) test in men.

The prevailing hypothesis in CUP is that the primary tumor either remains microscopic and escapes clinical detection or disappear after seeding the metastasis, which may be due to angiogenic incompetency of the primary tumor.

Hisotological subtypes of cancer of unknown primary site

Adenocarcinoma

Squamous cell carcinoma

Poorly differentiated adeno carcinoma

Poorly differentiated carcinoma

Poorly differentiated neoplasm

Unclassified neoplasm.

In those patients with cervical lymphnodes from an occult squamous cell primary tumors a careful head and neck examination is particularly important. The

entire Oropharynx, hypopharynx, nasopharynx and larynx needs to be visualized thoroughly.

A chest X ray is always indicated and a CT scan of the head and neck is usually indicated to determine the primary tumor and staging.

The next step is pan endoscopy usually performed in an operating room with patient under general anaesthesia.

Oesphagoscopy, laryngoscopy, bronchoscopy and Nasopharyngoscopy are performed. Random Biospies are taken from typical occult primary sites for squamous cell carcinoma, naso pharynx, the midbase of the tongue, the pyriform sinus, and the tonsils.

The neck comprises more than 25 nodal basins. These nodes have been grouped into six specific levels. The most common site of metastasis in patients with head and neck squamous cell cancer is the level II followed by level III.

Probable sites of primary tumors according to the location of cervical metastasis :

Location of nodes	Primary tumor sites
Submental	Floor of mouth, lips, anterior tongue.
Submandibular	Retromolar trigone
Jugulodigastric	Hypopharynx, base of tongue, tonsils, nasopharynx, larynx.
Lower jugular	Thyroid, Hypopharynx, Nasopharynx.
Supra clavicular	Lung (40%) Thyroid (20%) GI (12%) GU (8%)
Posterior triangle	Nasopharynx

Patients with metastatic adenocarcinoma in cervical lymphnodes from an occult primary tumor have a less favourable outcome than do those with squamous cell cancer.

Metastasis to right and left supraclavicular lymphnodes can be from thorax, breast, head and neck. But abdomen malignancies usually metastasize to left supraclavicular nodes.

Immuno histochemical analysis

Common markers for Adeno carcinoma include cytokeratin 7 and 20

Thyroid transcription factor – 1 (TTF-I)

can be positive in lung and thyroid cancer.

No immunohistochemical marker is 100% specific and many of these tests as well as serum markers can be confusing and rarely help in the search for a primary tumor or in treatment planning.

Management

Squamous cell carcinoma with unknown primary site:

Local treatment with radical neck dissection , high dose radiotherapy or a combination of these modalities.

Eradication of Occult primary sites in head and neck is included in the irradiation field.

Chemotherapy using Cisplatin and 5FU when combined with local therapy shows higher response rate and longer long term survival rate.

If local therapy is first then Paclitaxel or Platinum based Chemotherapy should be considered.

Adenocarcinoma with unknown primary site :

Chemotherapy with 5FU.

Patients with unilateral neck node < 3 cms (N1): Radical neck dissection with post operative radiotherapy to possible primary sites.

Patients with nodes >3cms and < 6cms, multiple ipsilateral nodes or N2a, N2b) Radical neck dissection followed by radiotherapy.

Bilateral neck nodes : Staged or Simultaneous Bilateral neck dissection followed by RT.

Nodes > 6 cms (N3) : Palliative Radiotherapy and Chemotherapy.

Indication for postoperative RT : node >3cms , extracapsular spread, multiple nodes .

NECK DISSECTIONS

The philosophy for the treatment of cervical lymphatics in Head and Neck cancer patient has evolved significantly since mid 1970s. The presence of cervical metastasis decreases the 5 year survival rate in patients with upper aerodigestive malignancies by approximately 50%. As such adequate treatment of the No and N1 neck in these patients has always been viewed as a priority in an effort to increase disease free survival rates.

RND (Radical Neck Dissection)

“The gold standard for control of cervical metastasis had been radical neck dissection first described by Crile. This involves removal of level I to Level V lymphnodes, Sternocleidomastoid muscle, Internal jugular vein, XI cranial nerve.

MRND (Modified radical neck dissection)

Any modification of RND that preserves non lymphatic structures (Sternocleidomastoid muscle, Internal jugular vein, XI cranial nerve) is defined as modified radical neck dissection (MRND)

MRND Type I : Preserves XI cranial nerve .

MRND Type II : Preserves Sternocleidomastoid muscle and XI Cranial nerve.

MRND Type III : Preserves all three structures.

(Functional neck dissection)

SND(Selective neck dissection)

Neck dissection that preserves lymphatic compartments normally removed on RND is termed Selective neck dissection.

Selective neck dissection. The principle behind preservation of certain nodal groups is that specific primary sites preferentially drain their lymphatics in a predictable pattern.

Types

Supraomohyoid neck dissection

Removes LN I to III typically used in oral cavity primaries.

Lateral neck dissection : Removes nodes level II to IV frequently used for laryngeal malignancy.

Postero lateral neck dissection

Removes lymphnode level II to V. used in Thyroid cancer clinically negative (No) Neck – Risk for occult metastasis 20%

Elective Treatment of nodes –

1. Elective neck irradiation
2. Elective neck dissection (SND)

Additional role of Neck dissection is as a staging tool to determine the need for post operative adjacent radiotherapy.

For clinically N+ neck – choice of treatment is MRND or RND – for treatment of limited NI disease

Presence of adverse prognostic factors require adjuvant radiation therapy.

LYMPHOMAS

HODGKINS LYMPHOMA

Hodgkin's disease is a lymphoproliferative disorder with a bimodal age distribution. The early incidence is between the age 10 and 13 yrs and the late incidence occurs over the age of 55 (Nyhus LM 1992). One third patients develop B Symptoms. (Fever, weight loss, Night sweats)

In the Head and Neck, non tender, matted rubbery nodes that are clustered together are found primarily in the posterior triangle of the neck. Evaluation with CT scan of the neck, chest and abdomen is necessary for staging the disease. Histopathologically the tumor shows Reed Sternberg (RS) giant cells. FNAC or excisional biopsy of an enlarged lymph node confirms the diagnosis.

Hodgkins disease is of Bcell origin and more common in males. Infection with HIV and EBV is a risk factor for developing Hodgkins disease.

Histologic types of Hodgkins disease:

Lymphocyte predominant

Nodular Sclerosis

Mixed Cellularity

Lymphocyte depleted

Non operative staging and prognosis factors are used to guide therapy .Almost all patients require chemotherapy with or without radiation therapy in extensive disease. Patients with early disease are treated by local irradiation.

Stage I and II – Radiotherapy using Mantle field or Inverted Y field.

Stage III and IV –Chemotherapy using ABVD or MOPP Regimen

A : Adriamycin 25mg/sqm IV on day 1 and 15

B : Bleomycin 10 mg/sqm IV on day 1 and 15

V : Vinblastine 6mg/sqm IV on day 1 and 15

D : Dacarbazine 150mg/sqm on day 1to 5

Every 28 days 6 cycles.

MOPP(Mechlorethamine , Oncovin,Procarbazine , Prednisolone)

NONHODGKINS LYMPHOMA

This lymphoproliferative, disorder represents 2% of all malignant tumors of the body. There is a steady increase in the incidence of NHL from childhood to adulthood, with the exception of Burkitt's lymphoma.

NHL constitutes 62.4% of all Lymphoid malignancies. Patients with both Primary and Secondary immunodeficiency states are predisposed to developing NHL.

Evaluation is necessary not only for staging but also the study the progress of the disease.

Chemotherapy : CHOP Regimen

C – Cyclophosphomide –750mg/ sq m IV on day 1

H – Adriamycin – 50 mg / sqm IV on day 1

O – 1.4mg /sqm IV on day 1

P – Prednisolone 100 mg for days 1 to 5

Every 21 days for 6 cycles.

Alternative Regimen

CVP (Cyclophosphomide,Vincristine ,Prednisolone)

COPP(Cyclophosphomide,Vincristine , Procarbazine,Prednisolone)

CMOP(Cyclophosphomide,Mitoxantrone,Vincristine ,Prednisolone)

The Ann Arbor Staging System for Hodgkin's Disease

Stage	Definition
I	Involvement of a single lymph node region or lymphoid structure (e.g., spleen, thymus, Waldeyer's ring)
II	Involvement of two or more lymph node regions on the same side of the diaphragm (the mediastinum is a single site; hilar lymph nodes should be considered "lateralized" and, when involved on both sides, constitute stage II disease)
III	Involvement of lymph node regions or lymphoid structures on both sides of the diaphragm
III ₁	Subdiaphragmatic involvement limited to spleen, splenic hilar nodes, celiac nodes, or portal nodes
III ₂	Subdiaphragmatic involvement includes paraaortic, iliac, or mesenteric nodes plus structures in III ₁
IV	Involvement of extranodal site(s) beyond that designated as "E" More than one extranodal deposit at any location Any involvement of liver or bone marrow

A	No symptoms
B	<p>Unexplained weight loss of >10% of the body weight during the 6 months before staging investigation</p> <p>Unexplained, persistent, or recurrent fever with temperatures >38°C during the previous month</p> <p>Recurrent drenching night sweats during the previous month</p>
E	Localized, solitary involvement of extralymphatic tissue, excluding liver and bone marrow

Malignant Submandibular gland tumours :

They are hard, nodular, often get fixed to skin, muscle, hypoglossal nerve and mandible. Cervical lymph node involvement in advanced disease. Diagnosis is by FNAC of the primary tumour and the involved node. CT Scan to know the local extent of the tumour and Lymph node status. Treatment is Submandibular gland excision with removal of level I lymph nodes preserving the Marginal mandibular branch of facial nerve, lingual nerve and hypoglossal nerve.

Miscellaneous swellings.

Pharyngeal pouch.

This is a herniation of pharyngeal mucosa through a weak area in the back of pharynx (triangle of Lannier) between the two parts of the inferior constrictor

muscle (Killian's dehiscence) Failure of relaxation of the crico pharyngeous during swallowing initiates pouch formation. (Pulsion diverticulum)

It usually occurs on the left sides as a thin walled mucosal sac containing muscle only at the neck. Depending on the size it may present as irritation, regurgitation or obstruction. Early malignant change may occur. Barium swallow may confirm the diagnosis.

Laryngeal pouch:

Air containing diverticulum resulting from herniation of laryngeal mucosa .

Tympanic swelling over thyrohyoid membrane. Usually seen in Trumpet players and glass blowers.

Types : Internal, external , combined

Clinical features:

Smooth, soft, resonant with boggy feel. It becomes prominent on coughing, blowing and on valsalva manoeuvre. It causes hoarseness of voice and airway obstruction. It may move up with larynx on swallowing.

Complication:

Laryngopyocoele – may be filled with mucoid fluid- infected.

Treatment : Excision .

Parotid Tumours :

Tumours arising from tail of Parotid gland usually present as upper neck mass.

Eg Warthin 's tumour.

Lateral Abberant Thyroid :

There is no evidence that abberant thyroid tissue ever occurs in a lateral position. (Willis). 'Normal thyroid tissue' found laterally separate from thyroid gland, must be considered and treated as a metastasis in a cervical lymphnode from an occult papillary thyroid carcinoma.

Parathyroid tumours :

Parathyroid tumours are seldom palpable except in patients with profound hypercalcemia. A palpable neck mass in a patient with primary hyperparathyroidism is more likely to be thyroid in origin or a parathyroid carcinoma. Neck should be examined for evidence of mass or lymphadenopathy.

INVESTIGATIONS

In many instances a thorough physical examination is insufficient in providing the clinician with enough information to establish a conclusive diagnosis. As a result additional investigations may be required. Blood culture and sensitivity as well as serological and immunological evaluation can confirm the diagnosis of a number of inflammatory and neoplastic diseases.

An increased monocyte count and a positive monospot test result are pathognomonic of Infectious Mononucleosis. A positive Mantoux test indicates exposure to Myobacterial infection. A positive kwiem test is pathognomonic of sarcoidosis. High serum titres of EBV anti capsid Antibodies and S.IgA have an important correlation with the presence of Nasopharyngeal carcinoma.

FNAC (Fine needle aspiration cytology)

This is a simple, safe and cost effective procedure with minimal risk of complications. It quickly provides information useful to the clinician. Metastatic neck masses can also be accurately diagnosed without fear of disseminating the malignancy.

False positive and false negative results however must be kept in mind and infact present the major criticism regarding the usefulness of FNAC.

Radiology

Radiological survey as in other parts of the body may be required to give information above the static structure of the neck region as well as to outline soft tissue structures.

CT (computed tomography)

Since its introduction, CT has become the single most informative test for the diagnostic evaluation of cervical masses. Cyst appear as smooth walled circular or ovoid structure with low CT density. Solid masses may be homogenous or have mixed CT density with variable degrees of contrast enhancement. The presence of a mass at the base of the skull or other areas that is difficult to reach on physical examination can be confirmed. The extend of tumor in the adjacent soft tissue can be predicted. The evaluation of the exact size and location of palpable nodes can be delineated and additional occult nodes demonstrated.

MRI (magnetic resonance imaging)

The main advantage of MRI over CT is that it provides information in three orthogonal planes – the axial, coronal and saggital planes. Thus a more accurate profile of the size, location and extend of the tumor can be obtained.

Angiography

The presence of a pulsatile mass in the neck or clinical evidence of a paraganglioma is an indication for angiography. High resolution angiography is preferred because it more accurately reveals the nature of the mass, provide for the possibility of simultaneous selective embolisation of the feeding vessels during the same procedure.

USG (ultrasonogram)

A sonographic evaluation can accurately differentiate between a cystic and a solid lesion. However it adds only a limited perspective into the diagnosis of a cervical mass.

Esophagoscopy, Bronchoscopy, Laryngoscopy (Triple endoscopy)

These investigations can also provide additional clue in the diagnosis of cervical mass. To visualise the primary as well as to take biopsy from the lesion for histopathological confirmation.

FDG - PET scan (Positron emission tomography)

It uses 18- fluoro deoxyglucose . Malignant cells shows an increased uptake of FDG.It is a sensitive tool for detection of primary as well as metastatic spread.

Biopsy

Early biopsy of a neck mass to establish a diagnosis although tempting is strongly discouraged and should be avoided until a thorough investigation of the mass by other means is completed.

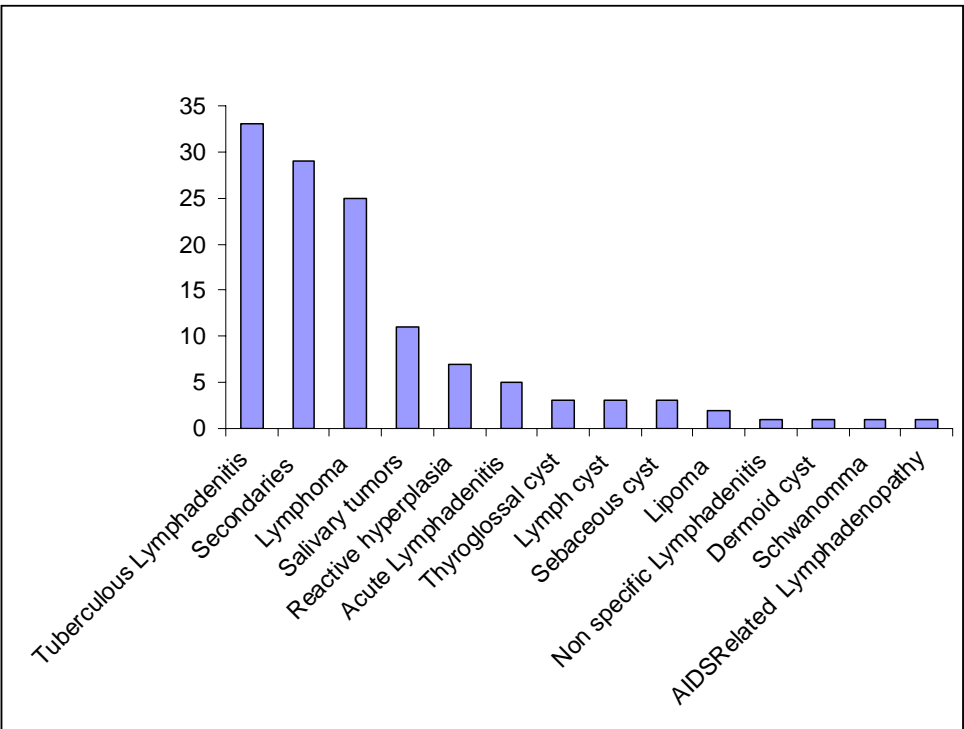
The incision for an open biopsy should be planned within the line of future neck dissection.

DATA ANALYSIS

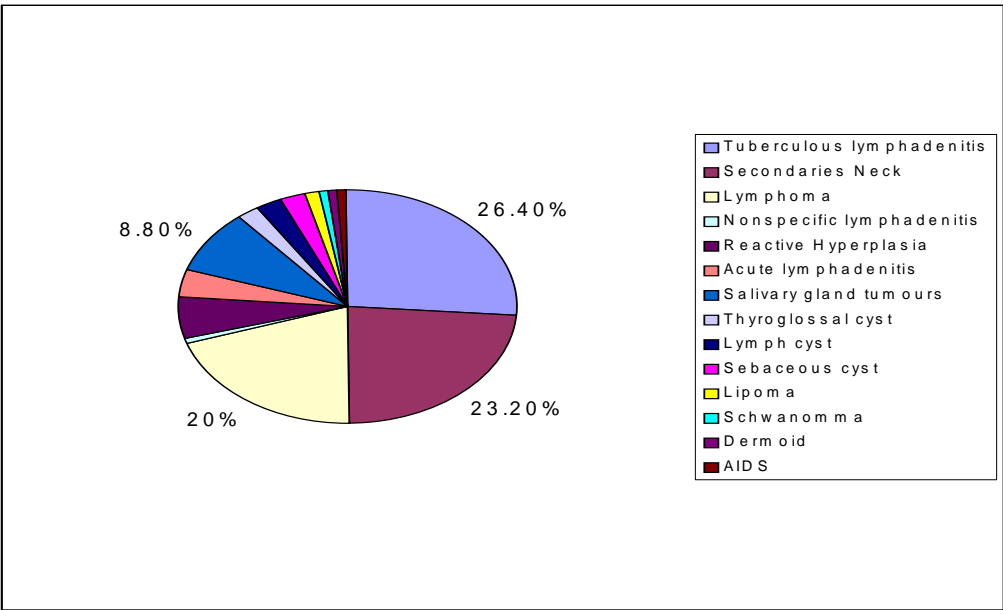
DISTRIBUTION OF NON THYROIDAL NECK SWELLINGS

Neck swellings	Male	Female	Total	%
Tuberculous Lymphadenitis	19	14	33	26.4%
Secondaries	21	8	29	23.2%
Lymphoma	17	8	25	20%
Salivary tumors	3	8	11	8.8%
Reactive hyperplasia	3	4	7	5.6%
Acute Lymphadenitis	4	1	5	4%
Thyroglossal cyst	1	2	3	2.4%
Lymph cyst	2	1	3	2.4%
Sebaceous cyst	1	2	3	2.4%
Lipoma	2	0	2	1.6%
Non specific Lymphadenitis	0	1	1	0.8%
Dermoid cyst	1	0	1	0.8%
Schwanomma	0	1	1	0.8%
AIDSRelated Lymphadenopathy	1	0	1	0.8%
Total	75	50	125	100%

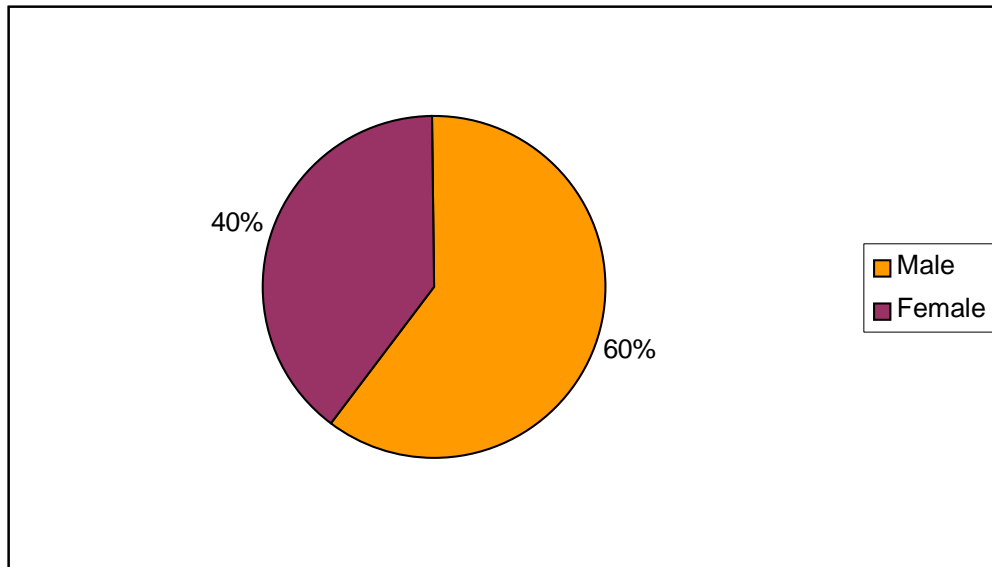
DISTRIBUTION OF NECK SWELLINGS



DISTRIBUTION OF NECK SWELLINGS



SEX INCIDENCE OF NON THYROIDAL NECK SWELLINGS



SEX INCIDENCE OF NON THYROIDAL NECK SWELLINGS

Male	60%
Female	40%

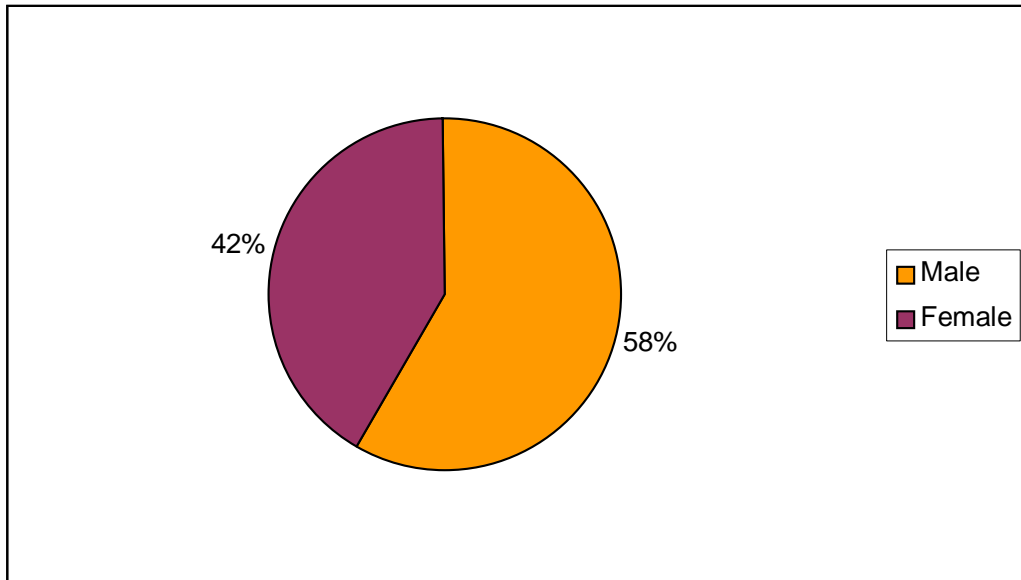
TUBERCULOUS LYMPHADENITIS

	15 – 30	30 – 50	above 50	Total
Male	16	1	2	19
Female	10	2	2	14

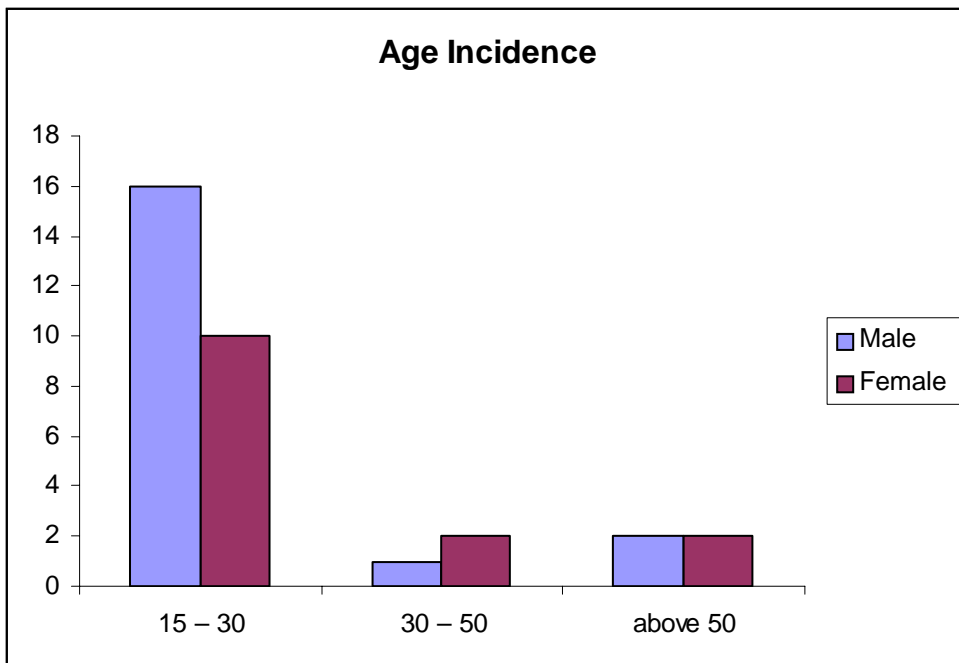
SECONDARIES NECK

	Below 40 year	Above 40 year	Total
Male	2	19	21
Female	3	5	8
Total	5	24	29

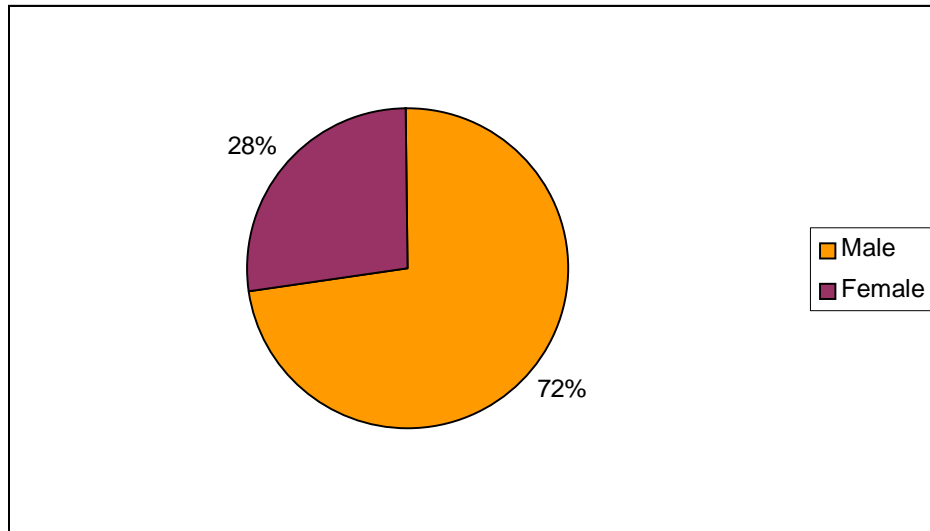
TUBERCULOUS LYMPHADENITIS - SEX INCIDENCE



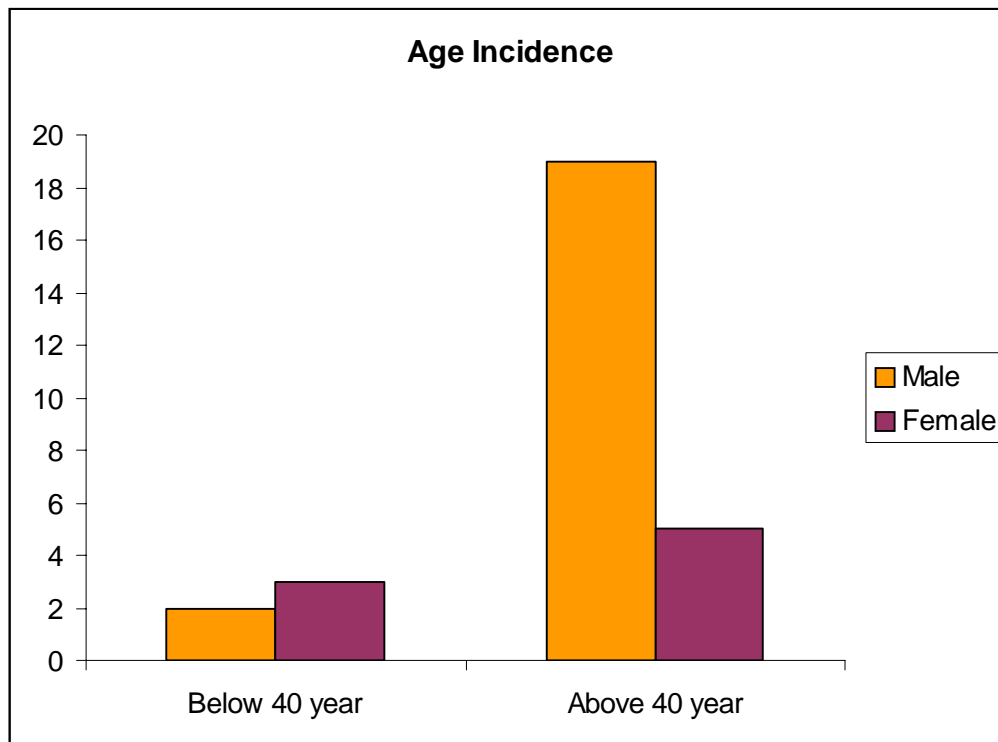
AGE INCIDENCE OF TUBERCULOUS LYMPHADENITIS



SECONDARIES NECK – SEX INCIDENCE



AGE INCIDENCE OF SECONDARIES NECK



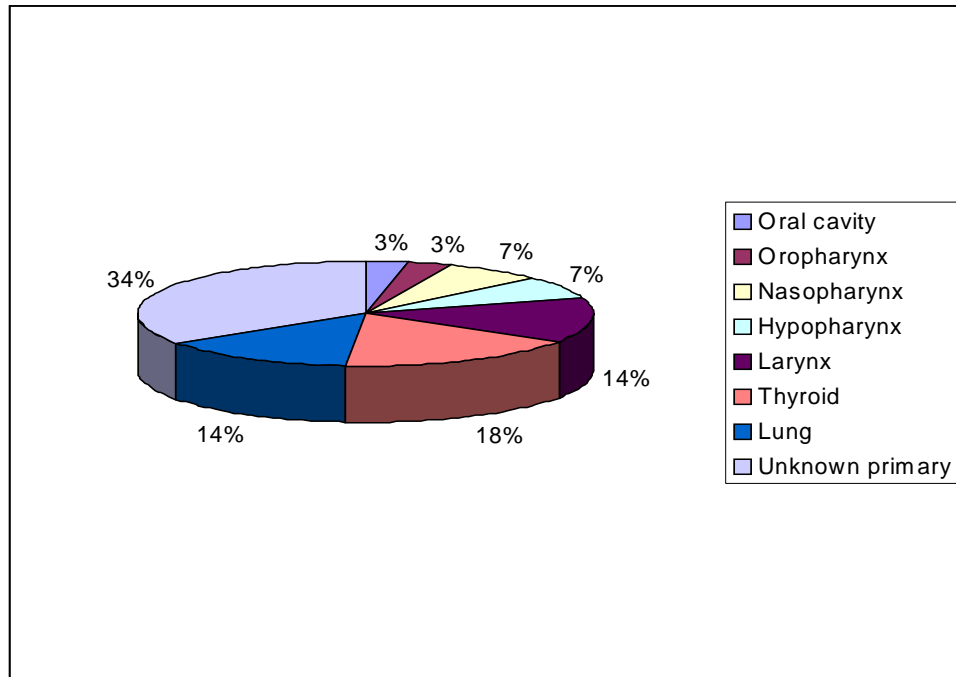
PRIMARY SITES FOR THE SECONDARIES

	Below 40 year		Above 40 years		Total	Percentage
Oral cavity	0	0	0	1	1	3%
Oropharynx	0	0	1	0	1	3%
Nasopharynx	0	0	2	0	2	7%
Hypopharynx	0	1	1	0	2	7%
Larynx	0	0	3	1	4	14%
Thyroid	2	1	2	0	5	17.5%
Lung	1	0	3	0	4	14%
Unknown primary	1	1	6	2	10	34.5%

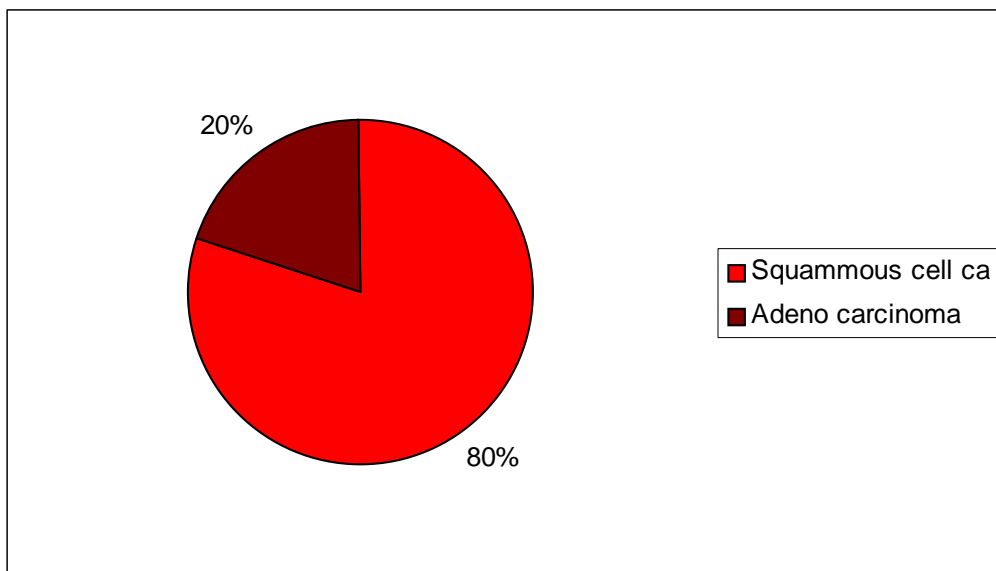
SECONDARIES WITH UNKNOWN PRIMARY

Squamous cell ca	Adeno carcinoma
80%	20%

DISTRIBUTION OF PRIMARIES



SECONDARIES WITH UNKNOWN PRIMARY



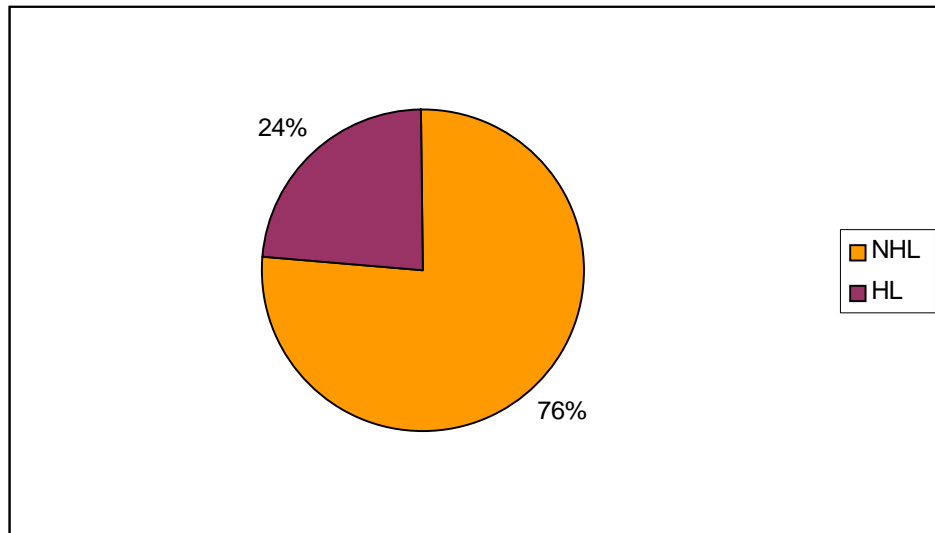
LYMPHOMA SEX INCIDENCE

Male		Female	
NHL	HL	NHL	HL
13	4	6	2

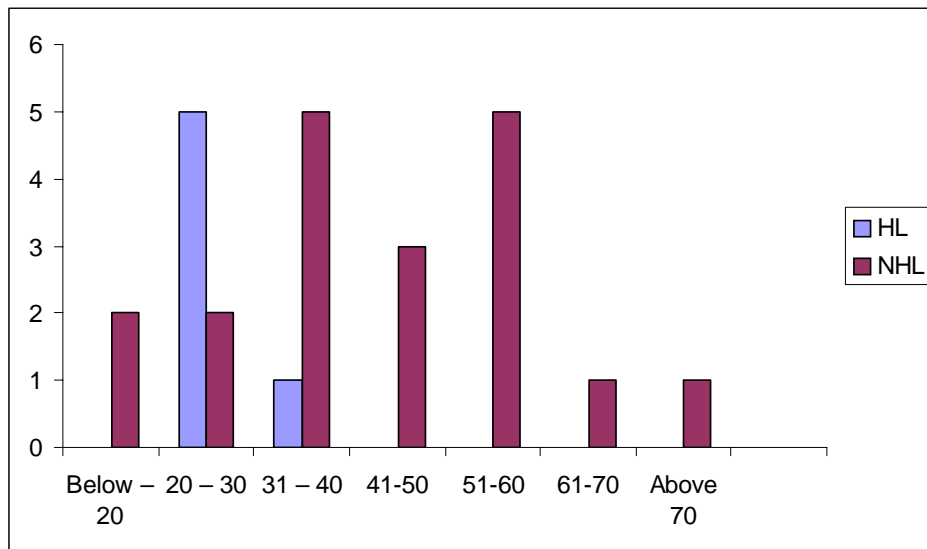
LYMPHOMA AGE INCIDENCE

Age	HL	NHL
Below – 20	0	2
20 – 30	5	2
31 – 40	1	5
41-50	0	3
51-60	0	5
61-70	0	1
Above 70	-	1
Total	6	19

DISTRIBUTION OF LYMPHOMAS



LYMPHOMA – AGE INCIDENCE



SUBMANDIBULAR GLAND SWELLING

	Male	Female	Total	%
Submandibular sialadenitis	1	4	5	46%
Pleomorphic adenoma	0-	3	3	27%
Submandibular gland cyst	2	-	2	18%
Acinic cell carcinoma	-	1	1	9%
Total	3	8	11	100

LYMPH CYST

	20 – 50	Above 50
Male	2	-
Female	1	-

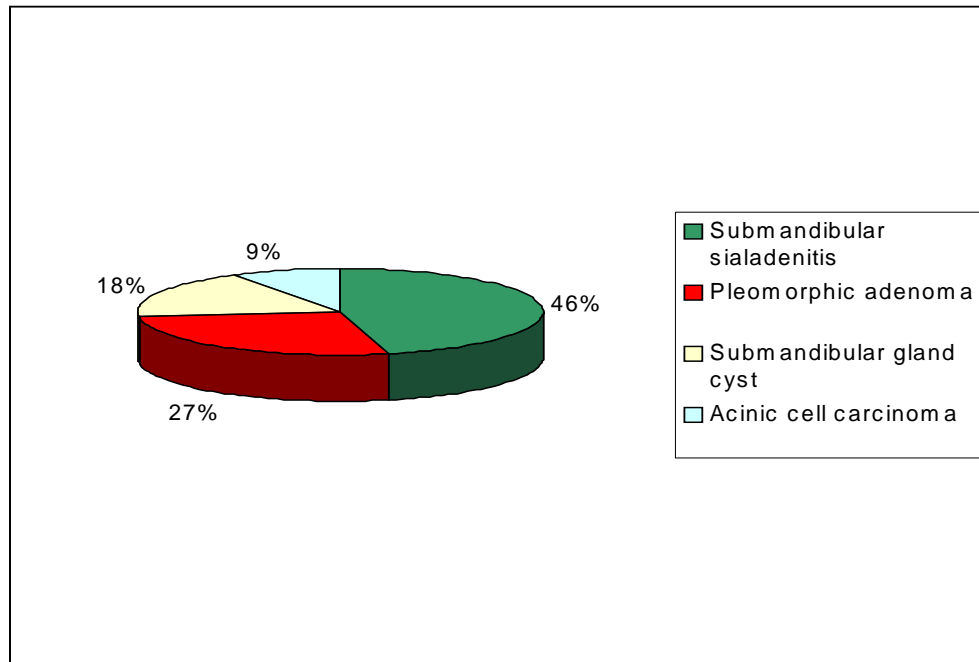
THYROGLOSSAL CYST

	Below 25	Above 25
Male	0	1
Female	2	0

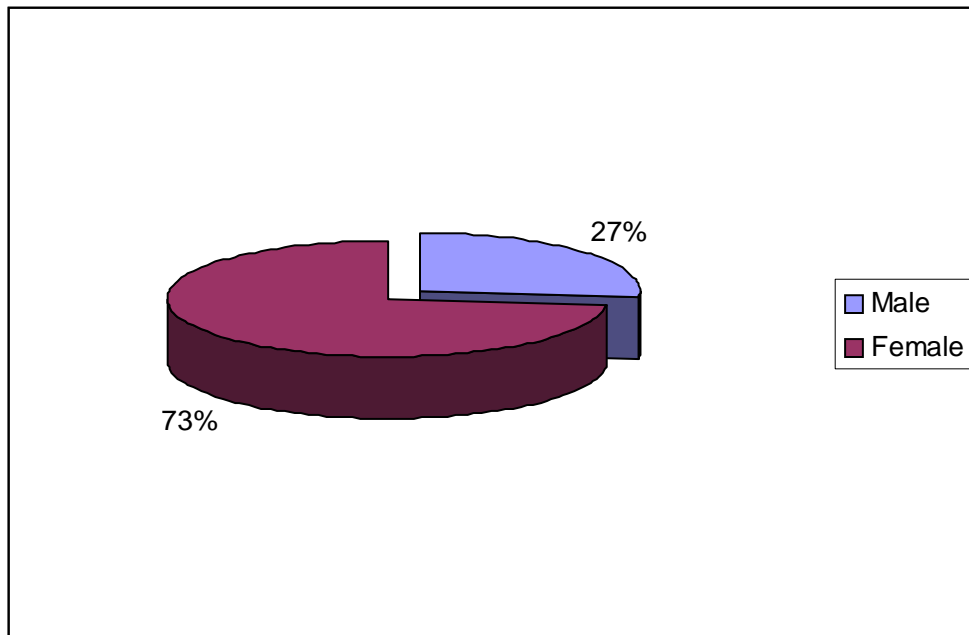
DERMOID CYST

	Below 50	Above 50
Male	1	0
Female	0	0

DISTRIBUTION OF SUBMANDIBULAR SWELLINGS



SEX INCIDENCE OF SUBMANDIBULAR SWELLINGS



SEBACEOUS CYST

	Below 50	Above 50
Male	0	1
Female	2	0

LIPOMA

	Below 50	Above 50
Male	2	0
Female	0	0

SCHWANNOMA

	Below 50	Above 50
Male	0	0
Female	0	1

AIDS RELATED LYMPHADENOPATHY

	Below 50	Above 50
Male	1	0
Female	0	0

DISCUSSION

The study includes all histologically confirmed non thyroidal neck swellings. Total number of patients studied were 125.

Epidemiology

Demography

Tirunelveli Medical College Hospital is a tertiary referral hospital for the districts Tirunelveli , Kanyakumari and Thoothukudi. Patients evaluated in this study were from in around Tirunelveli itself.

Sex incidence:

In this study of Non thyroidal neck swellings 75(60%) Males and 50 (40%) females were included.

Age incidence:

The patients above the age of 12 is included in the study. The youngest patient is 13 year old and the oldest is 75 year old in our study.

Epidemiology of Swellings.

80.8% of non thyroidal neck swellings are of lymph nodal origin.

In this study congenital swellings were

Thyroglossal cyst

Lymph cyst

Dermoid cyst

Thyroglossal cyst

Thyroglossal cyst constitutes 2.4% of all nonthyroidal neck swellings. In the study conducted by Cuscheiri et al men and women were equally affected. In this study male : female ratio is 1 : 2. All of the Thyroglossal cyst observed were midline cyst. The actual site of occurrence were as follows.

Sub hyoid – 75%

Level of thyroid cartilage – 15%

Supra hyoid - 5%

Cricoid - 4%

Base of Tongue – 1%

In this study two cases of Thyroglossal cysts reported were subhyoid (66%) in position and one at the level of thyroid cartilage.

They presented as a soft cystic swelling showing upward movement on protrusion of the tongue. Sistrunk's operation was done in all three patients.

Lymph cyst

These patients presented with a cystic lesion in the posterior triangle of neck which was fluctuant, soft and brilliantly transilluminant and present since childhood. Histopathological diagnosis was simple lymph cyst. One case presented as a recurrent lymph cyst. All patients were less than 50 years and male female ratio was 2:1.

Tuberculous Lymphadenitis

This is a fairly uncommon condition in the USA and Europe but occurs quite frequently in Asia and Africa.

Cervical nodes are generally distinctly visible and easily palpable, often associated with a non – specific illness. Weight loss, anorexia and less frequently with night sweats. Lee et al reported that 57% of patients had no systemic symptoms at all.

In this study of 33 cases of tuberculous lymphadenitis the swellings presented as painless unilateral or bilateral neck nodes of 1 to 3 cm size and with a history of generalized malaise, weight loss, fever, night sweats and cough.

The most common lymph node groups affected were the anterior jugular group (Level II, III, IV). (Doctor 1964, Fraser 1965, Kent 1967)

The age group commonly affected is 15 – 30 yrs. Male : female ratio is 1:1.35. Five of the 33 patients presented with cold abscess.

Diagnosis was made by FNAC of the lymph node which showed granulomatous lymphadenitis. (Bloch 1967, Patra et al 1983, Dandapat et al 1986)

Mantoux test was positive in 80% of cases (>10mm is positive). (R S Bedi, V K Arora et al) None of the patients had pulmonary tuberculosis in chest X – ray. All patients were sputum negative for AFB. ELISA IgG and IgM antibody test was done in 5 cases and was positive in all 5 cases.

TUBERCULOUS LYMPHADENITIS



TUBERCULOUS COLD ABSCESS



Chest physician opinion was obtained for all patients. They were registered under category III Regimen. Two months HRZ (Isoniazid, Rifampicin, Pyrazinamide) followed by four months of HR (Isoniazid and Rifampicin). The drugs are issued thrice weekly.

Lymphnode Tuberculosis is the most common presentation of extra pulmonary tuberculosis (>40% of cases in United States). Lymphnode disease is particularly frequent in HIV infected patients. Once caused mainly by *Mycobacterium bovis*, Tuberculous lymphadenitis is today due largely to *Mycobacterium tuberculosis*.

Lymphnode tuberculosis presents as painless swelling of lymphnodes most commonly posterior cervical and supraclavicular site (a condition historically referred to as scrofula) (Harrison's Internal Medicine)

Lymphnodes are usually discrete and nontender in early disease, but may also be present with cold abscess and sinuses. AFB are seen in up to 50% of cases and culture positive in 70 – 80% (Harrison's Internal Medicine).

INH – 15mg / kg / Max 900 mg

Rifampicin – 10mg / Kg max 600 mg

Pyrazinamide – 30 – 40 mg /kg max 3 g.

The cold abscess were treated by repeated aspiration and evacuation.

Chronic Non specific lymphadenitis

Changes in lymphnode due to prolonged inflammatory or infective pathology. Common age group affected is < 15 years.in this study one 15 yr old female presented with nonspecific lymphadenitis.

Reactive Hyperplasia

This is a benign and reversible enlargement of lymphoid tissue secondary to antigenic stimulus. In our study 7 patients had FNAC report of reactive hyperplasia of lymphnode who responded well to antibiotics and anti inflammatory drugs. The age group commonly affected were above 30 years.

Causes

Idiopathic

Viral lymphadenitis

Rhuematoid Arthritis

Persistent generalized lymphadenopathy

Toxoplasmosis etc.

In this study common cause for reactive hyperplasia was Periodontitis and Dental caries. There is a possibility of overlap among reactive hyperplasia, lymphocytic lymphoma and Hodgkin's disease as described by Gupta et.al.

Acute suppurative Lymphadenitis

Five patients presented with acute suppurative lymphadenitis.All of them had a focus of infection in the oral cavity. Two patients were diabetic. All responded to antibiotics and two patients required drainage of abscess.

LIPOMA NECK



SUBMANDIBULAR SIALADENITIS



Submandibular gland swellings

Inflammatory lesions of submandibular salivary gland constitute about 50% of submandibular gland swellings. In this study inflammatory swellings forms 45% of all submandibular swellings. Chronic submandibular gland sialadenitis is seen more in females (M.F. ratio is 1:4) In our study two patients presented with classical clinical picture of pain and swelling during meals. Other patients presented with a lump in the submandibular region and on examination enlarged firm submandibular gland that is tender on bimanual palpation was present. Diagnosis is by FNAC. Sialography was done only in two patients which showed multiple calculi in wharton's duct.

Excision of submandibular gland was done in all cases.

Benign neoplasms of submandibular gland include pleomorphic adenoma (3 patients) and submandibular gland cyst (2 patients) .

The malignant tumour of submandibular salivary gland in our study is Acinic cell carcinoma which is a low grade slow growing tumour and it was treated by complete excision of the gland along with level I lymph node clearance.

Two male patients presented with submandibular cystic lesion which was diagnosed by histopathology after surgical excision of the gland.

Schwannomas

Schwannomas are solitary and encapsulated tumors attached to or surrounding a nerve. Paralysis of the associated nerve is unusual. The vagus nerve is the most common site for these tumors within the neck.

Peripheral nerve tumors have 10% chance for malignant change.

In our study one female presented as a cystic mass in the neck which on histopathological examination reported as schwannoma. Complete excision of the tumour was done and it was arising from the Spinal accessory nerve.

Secondaries Neck

Hayes Martin one of the foremost Head and neck surgeon of the twentieth century state that ‘Asymptomatic enlargement of one of more cervical nodes in the adult is almost always carcinomatous’

A firm mass more than 2 cm in diameter demands further investigation and must be considered neoplastic until proven otherwise.

Nearly 90% of malignancy in neck are squamous cell carcinomatous secondary metastatic deposits. The only primary malignancy seen in this area is a carcinoma arising from branchial cleft cyst and only a few cases have been reported which fulfil the criteria for such a diagnosis (Sreethar et al 1984)

The results have been represented both diagrammatically as well as in the form of a master chart listing complete patient details.

Total number of secondaries neck in this study is 29 (23.2 %). Of this 34.5 % forms the secondaries neck with unknown primary. The commonest primary is from thyroid which constitutes 17.5% of total neck secondaries. Larynx and Lung comes next in frequency with 14%.

80% of the secondaries with unknown primary is metastatic squamous cell carcinomas. 75.86% of patients are above the age of 40 years. Male female ratio is 1 : 2.6. FNAC was diagnostic in all cases. (Lyes et al and Feldman et al)

SECONDARIES NECK WITH UNKNOWN PRIMARY



**CARCINOMA NASO PHARYNX WITH
SECONDARIES NECK**



**CARCINOMA LARYNX WITH SECONDARIES IN
PARATRACHEAL NODES**



SECONDARIES NECK WITH FUNGATION



RELATIVE FREQUENCIES OF PRIMARY SITES

Primary Site	This Study	Cuschieri et al
Oropharynx	3 %	15 %
Nasopharynx	7 %	15 %
Thyroid	17.5 %	20 %
Hypopharynx	7 %	10 %
Larynx	14 %	20 %

Palliative Radiotherapy was given for metastatic squamous cell carcinomas. Palliative Chemotherapy was given for metastatic adenocarcinomas. Total thyroidectomy and modified radical neck dissection was done for Ca thyroid with secondaries in the cervical lymph nodes.

Lymphoma

In this study total number of Lymphoma patients were 25. male : female ratio is 2: 1 . Six patients had Hodgkin's disease(24%) and nineteen patients had Nonhodgkin's Lymphoma (76%).Hodgkin's disease is more common in males in the third decade. NHL seen more in the fifth and sixth decade. Most of them presented with stage II and III. FNAC of the lymph nodes showed lymphoproliferative disorder. Excision biopsy of the nodes were required to confirm the diagnosis of Hodgkin's or NHL. Patients with Hodgkin's disease were treated with ABVD regimen and patients with NHL were treated with CHOP regimen .

NONHODGKIN'S LYMPHOMA



HODGKINS LYMPHOMA



AIDS related Lymphadenopathy :

Causes of AIDS related Lymphadenopathy :

HIV perse – due to Follicular hyperplasia

AIDS related complex(ARC) - Advanced stage of HIV.

Persistent generalised lymphadenopathy seen in asymptomatic carrier state.

AIDS related Hodgkin's or NHL.

Oppurtunistic infections.

Miscellaneous tumours : These include Lipoma , dermoid cyst and sebaceous cyst.

CONCLUSIONS

1. Any patient above the age of forty presenting with a swelling in the neck should be thoroughly investigated.
2. 80.8% of non thyroidal neck swellings are of lymph nodal origin.
3. Neck swellings especially Tuberculous lymphadenitis and Secondaries are more common among the lower social economic status.
4. Tuberculous adenitis is the most common non thyroidal swellings found in the neck (26.4%)
5. Commonest age group affected by Tuberculous Lymphadenitis is 15 – 30 age group (79%).
6. Secondary mestastatic lymphnodes are the next common non thyroidal neck swelling (23.2%).
7. Secondaries neck with Unknown Primary forms 34.5% of all secondary lymph nodes of the neck.
8. For secondaries in the cervical lymphnodes, thyroid is the most common primary.
9. Secondaries neck is more common in males (72%) and 83% of patients are above 40 yrs of age.
10. The incidence of Thyroglossal cyst is equal in both sexes Cuscheiri etal. But in this study Thyroglossal cyst has a female preponderance.
11. Non hodgkin's lymphoma constitutes 76% of all Lymphomas .
12. Hodgkin's lymphoma is more common in 3 rd decade and NHL in the 4th and 6th decade.

13. Inflammatory lesions of submandibular salivary gland constitute about 46% of submandibular gland swellings.
14. Reactive hyperplasia of cervical nodes are due to periodontitis and dental caries.
15. FNAC is a simple , easy to perform diagnostic method with an accuracy rate of 90% in our study.
16. Biopsy is to be avoided until full investigation of the mass is complete.

PROFORMA

THE PATTERN OF NON THYROIDAL NECK SWELLINGS TVMCH

Name

Age

Sex

Ip No :

Occupation

Address

DOA

DOS

DOD

COMPLAINTS

Swelling

Duration

Pain

Fever

Cough

Hemoptysis

Dyspnoea

Dysphagia

Loss of weight

Loss of appetite

Others

PAST HISTORY

Hypertension

Diabetes Mellitus

Pulmonary Tuberculosis

Previous surgeries

Others

PERSONAL HISTORY

Smoking

Alcohol

Tobacco Chewing

Diet

Bowel & Bladder habits

FAMILY HISTORY

H/o Similar illness

Exposure to pulmonary tuberculosis

MENSTRUAL HISTORY

TREATMENT HISTORY

GENERAL EXAMINATION

Built & Nourishment

Pallor

Jaundice

Cyanosis

Clubbing

Pedal Edema

Generalized Lymphadenopathy

Vitals : Pulse

BP

Respiration

Temperature

LOCAL EXAMINATION

1. SWELLING

Inspection

Site

Size

Shape

Number

Surface

Edge

Pulsation

Impulse on coughing

Movement with deglutition

Movement with protrusion of tongue

Skin over the swelling

Red & Edematous

Ulcer

Scar

Sinus

Dilated veins

Pigmentation

Venous engorgement of face & upper chest

Palpation

Temperature

Tenderness

Size, Shape, Extent

Surface

Edge

Consistency

Uniform

Variable

Soft

Firm

Hard

Fluctuation

Translucency

Impulse on coughing

Reducibility

Compressibility

Pulsation

Transmitted

Expansile

Fixity to the overlying skin

Fixity to the underlying structures

Plane of the swelling

Deep to SCM

Superficial to SCM

LYMPH NODES :

Level – I

Level – II

Level – III

Level – IV

Level – V

Level – VI

Level – VII

Axillary group

Inguinal group

Abdominal group

DRAINAGE AREA

Oral cavity

Arm

Breast

Chest

Abdomen

Testes

Percussion

Auscultation

Bruit

Neck movements

Upper limb

Other systems Examination

CVS

Respiratory System

Abdomen

Hepatosplenomegaly

Mass

Ascitis

External genitalia

Investigations :

Blood Hb

TC

DC

ESR

Urine Alb

Sugar

Deposits

Blood Urea

Sugar

S creatinine

CXR

X-ray Neck

FNAC

Biopsy

Mantoux test

USG Neck

USG abdomen

CT Neck

UGI Endoscopy

Laryngoscopy

Bronchoscopy

Peripheral smear

Bone marrow

HIV screening

DIAGNOSIS

TREATMENT

Excision

Neck dissection

Chemotherapy

Radiotherapy

ATT

Follow up :

**THE PATTERN ON NON THYROIDAL NECK SWELLINGS IN
TIRUNELVELI MEDICAL COLLEGE HOSPITAL**

S. No.	Name	Age/Sex	IP No	Triangle	Level	Investigation FNAC / Biopsy	Diagnosis	Treatment
1.	Paradesi	60/M	28692	Carotid	II, III	Metastatic squamous cell carcinoma	Secondaries neck with unknown primary	RT
2.	Gandhimathi	28/F	24614	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
3.	Muthammal	68/F	13242	Posterior	V	Metastatic Adenocarcinoma	Secondaries neck with unknown primary	RT
4.	Murugalakshmi	15/F	51863	Carotid	II, III	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
5.	Sunderrajan	53/M	44980	Anterior	II, III, IV	Metastatic sq.cell. carcinoma	Ca. Hypopharynx with secondaries neck(Ca Post Pharyngeal wall)	RT
6.	Priyadharshini	21/F	10723	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
7.	Sundari	48/F	9623	Submand	I	Sialadenitis	Submandibular sialadenitis	Submand gland excision
8.	Banumathi	42/F	9234	Carotid	II	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
9.	Velammal	57/F	21858	Carotid	II	Reactive Hyperplasia	Reactive Hyperplasia	Antibiotics.
10.	Thangeshkar	32/M	12540	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT

11.	Annapurnam	40/F	21951	Submand	I	Sialadenitis	Submandibular sialadenitis	Submand gland excision.
12.	Ramalakshmi	45/F	18725	Submand	I	Sialadenitis	Submandibular sialadenitis	Submand gland excision.
13.	Ponnaiyya	65/F	361581	Anterior	II, III,IV	Metastatic squamous cell ca.	Secondaries neck with unknown primary	RT
14.	Arunachalam	40/M	2162	Submand	I	Sialadenitis	Submandibular sialadenitis	Submand gland excision.
15.	Murugan	39/M	66	Submand	-	Sialadenitis	Submandibular gland cyst	Submand gland excision
16.	Muthukrishnan	20/M	6091	Anterior Posterior	II, III, V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
17.	Venketesh	34/M	25307	Carotid	II, III, IV	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
18.	Pushpam	65/M	30583	Carotid Supraclav icular	II, III, IV, V	Lymphoproliferative disorder Bx – NHL	NHL	CHOP
19.	Thaivakani	20/F	22707	Carotid	II, III	Granulomatous lymphadenitis	Tuberculous Lymphadenitis	ATT
20.	Kathirvel	55/M	22463	Anterior posterior	II, III, IV, V B/L	Metastatic carcinoma Bx – NHL	NHL	CHOP
21.	Sundari	50/F	235621	Submand	I	Pleomorphic adenoma	Pleomorphic adenoma submand gland	Submand glad excision
22.	Vetrivel	25/M	131686	Carotid	II	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT

23.	Subramanian	60/M	131327	Anterior & Posterior	II, III, IV, V	Adenocarcinomatous deposits	Secondaries neck with unknown primary	RT ,Cisplatin
24.	Velammal	51/F	21858	Anterior & Posterior	II, III, IV, V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
25.	Annapurnam	45/F	21591	Submand	-	Benign epithelial neoplasm	Pleomorphic adenoma (L) submand	Submand, gland excision.
26.	Kaliyappan	60/M	23432	Carotid posterior	II, V	Sq.cell. ca deposits	Nasopharyngeal ca with secondaries neck	RT
27.	Kumar	30/M	25326	Carotid posterior	II, III, IV,V	Lymphoproliferative disorders Bx – HL	HL	ABVD
28.	Kamatchi	66/F	4462	Submand	I	Acinic cell ca.	Acinic cell ca. submand	Submand gland and level I LN excision
29.	Varadarajan	47/M	11676	Submand	I	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
30.	Innasi	60/M	12173	Anterior	II, V	Sq.cell carcinoma deposits	Secondaries neck with unknown primary	RT
31.	Ramayya	60/M	107748	Anterior	II, III, IV, V	Lymphoma Bx. Diffuse Large cell lymphoma	NHL	CHOP.
32.	Velammal	56/F	32462	Submand		Pleomorphic Adenoma	Pleomorphic Adenoma submandibular gland	Submand gland excision.
33.	Seika	30/F	32562	Submand	I	Suppurative lymphadenitis	Acute lymphadenitis	Antibiotics

34.	Mariyal	35/F	17317	Ant. post submand	I, II, IV, V	Lymphoproliferative disorder Bx. HL	Hodgkin's disease	ABVD
35.	Madasamy	60/M	15973	Supraclavicular	V	Carcinomatous deposits	Secondaries neck with unknown primary	RT
36.	Sugadevan	60/M	12169	Carotid	II, III	Papillary carcinoma deposits	Ca. Thyroid with secondaries neck	Total Thyroidectomy with neck dissection.
37.	Syedali	25/M	14195	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
38.	Murugalakshmi	15/F	5286	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
39.	Muthammal	65/F	9621	Anterior	IV	Metastatic sq. cell. ca	Ca. Larynx with secondaries neck(Supraglottic Ca)	RT
40.	Shankarapandi	26/M	8434	Carotid	II	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
41.	Punidasudha	28/F	9437	Anterior	II	Papillary Ca. deposits	Ca. Thyroid with secondaries neck.	Total thyroidectomy neck dissection.
42.	Mariyammal	30/F	6631	Anterior Posterior	II, II, IV, V	Lymphoproliferative disorder Bx. HL	Hodgkin's disease	ABVD
43.	Ulagammal	52/F	4715	Carotid	II	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT

44.	Shankar	28/M	5418	Submand anterior	I, II, III	Bx. Hodgkin's lymphoma	Hodgkin's disease III A	ABVD
45.	Murugesan	39/M	661	Submand	I	Sialadenitis	Submandibular gland cyst	Submand gland excision.
46.	Muthukumar	20/M	6091	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
47.	Shankar	55/M	6032	Anterior	II, III, IV	Sq.cell. ca. deposits	Ca Larynx with secondaries neck	RT
48.	Ramasubbu	40/M	29460	Ant. Post.	I, II, III	Bx. NHL	NHL	CHOP
49.	Guruvammal	48/F	40574	Submand	I	Bx. NHL	NHL	CHOP
50.	Padmavathy	36/F	19370	Anterior	II, III	Bx. Tuberculous lymphadenitis	Tuberculous lymphadenitis	ATT
51.	Ramar	55/M	48673	Anterior	II, IV, V	Metastatic papillary Ca.	Ca. Thyroid with secondaries neck	Total thyroidectomy neck dissection.
52.	Shankaran	61/M	48845	Carotid	II	Metastatic squamous cell carcinoma	Ca. tongue with secondaries neck	RT
53.	Kader Mordeen	57/M	46518	Anterior Posterior	II, III, IV, V	Mod. squamous cell carcinoma	Ca. lung with secondaries neck	RT+CT
54.	Gandhimathi	40/F	49294	Carotid posterior	II, III, V	Metastatic Sq. cell carcinoma	Ca. Hypopharynx with secondaries neck(Ca Post Pharyngeal wall)	RT

55.	Natarajan	30/M	45490	Carotid	II	Metastatic sq. cell carcinoma	Secondaries neck with unknown primary	RT
56.	Ramasubbu	40/M	29460	Anterior Posterior	II, III	Lymphoproliferative disorder Bx NHL	NHL	CHOP
57.	Shankar	55/M	29320	Anterior	VI B/ L	Metastatic squamous cell ca.	Ca larynx with secondaries neck	RT
58.	Perumal	36/M	8505	Anterior	II, III, V	Lymphoproliferative disorder Bx NHL	NHL	CHOP
59.	Krishnan	65/M	58200	Submand	II	Lymphadenitis	Acute lymphadenitis	Antibiotics.
60.	Gurusamy	56/M	25968	Anterior submand	I, III, III	NHL	NHL	CHOP
61.	Muthayya	35/M	18053	Carotid	II	Suppurative lymphadenitis	Acute Lymphadenitis	Antibiotics
62.	Murugayya	44/M	11121	Submand carotid	I, III	NHL	NHL	CHOP
63.	Subbayya	75/M	11104	Carotid	II	Suppurative lymphadenitis	Acute lymphadenitis	Antibiotics
64.	Amalraj	40/M	3955	Anterior	III	Bx NHL	NHL	CHOP
65.	Ponnayya	55/M	15956	Anterior	II, III	Bx, NHL	NHL	CHOP
66.	Mariyappan	26/M	15955	Carotid	II, III	Bx. Hodgkins Disease	Hodgkins disease	ABVD + RT
67.	Ranjith kumar	14/M	17925	Anterior	II	Dermoid cyst	Pretracheal dermoid	Excision
68.	Kavitha	21/F	21074	Supracla vicular	V	Bx. NHL	NHL	CHOP
69.	Noor Mohamed	20/M	21045	Carotid	II	Granulomatous lymphadenitis	Tuberculous Lymphadenitis	ATT

70.	Kavitha	20/F	21033	Carotid	II, III	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
71.	Rubath	31/F	20964	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
72.	Petchiyammal	15/F	31962	Posterior	V	Nonspecific lymphadenitis	Non specific lymphadenitis	Antibiotics.
73.	Lakshmi	50/F	8991	Anterior	II, III	Reactive Hyperplasia	Reacitve node	Antibiotics.
74.	Iyyappan	23/M	397	Anterior	II, III	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
75.	Paulpandi	30/M	12623	Posterior	V	Lymph cyst	Lymph cyst	Excision.
76.	Shankar	22/M	3279	Anterior	II	Bx NHL	NHL	CHOP
77.	Murugan	45/M	15270	Anterior Posterior	II, III, V	Metastatic squammous cell ca	Ca. Nasopharynx with secondaries neck	RT
78.	Ganapathy	45/M	10192	Anterior posterior	II, III,V	Epidermoid cyst	Sebaceous cyst	Excision.
79.	Amalveda manickam	42/M	17132	Anterior		Thyroglossal cyst	Thyroglossal cyst	Sistrunk's operation.
80.	Chinnathai	45/M	6735	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadentis	ATT
81.	Mariyammal	37/F	19304	Anterior	-	Thyroglossal cyst	Thyroglossal cyst	Sistrunk's operation.
82.	Irudayaraj	57/M	15241	Anterior posterior	II, III, IV	Bx. NHL	NHL	CHOP

83.	Iyyappan	37/M	26090	Anterior Posterior	II, IV, V	FNAC Lymphoproliferative disorder Bx NHL	NHL	CHOP
84.	Ruthirani	17/F	16538	-	-	Thyroglossal cyst	Thyroglossal cyst	Sistrunks
85.	Chelladurai	53/M	33273	Anterior	IV	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
86.	Murugan	18/M	34254	Carotid	II	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
87.	Krishnan	57/M	35314	submand	I	Reactive Hyperplasia	Reactive Hyperplasia	Antibiotics.
88.	Ulaganathan	42/M	41525	Carotid	II	Reactive Hyperplasia	Reactive Hyperplasia	Antibiotics
89.	Maheshwaran	15/M	20486	Carotid submand	II	Reactive hyperplasia	Reactive hyperplasia	Antibiotics.
90.	Tamilselvi	35/F	24970	Posterior	-	Sebaceous cyst	Sebaceous cyst	Excision
91.	Mariyammal	20/F	37369	Anterior	-	Thyroglossal cyst	Thyroglossal cyst	Sistrunk's
92.	Avudaiyammal	52/F	41600	Submand	I	Reactive Hyperplasia	Reactive Hyperplasia	Antibiotics.
93.	Sarada	16/F	42768	Carotid	II	Lymphoproliferative disorder Bx NHL	NHL	CHOP
94.	Katheeja	50/F	38245	Submand	I	Squamous cell carcinoma deposits	Secondaries neck with unknown primary	RT
95.	Kalyani	40/F	32462	Submand	I	Sialadenitis	Submandibular sialadenitis	Submand gland excision,
96.	Petchimuthu	43/F	41071	Posterior	-	Sebaceous cyst	Sebaceous cyst	Excision
97.	Sathya	23/F	41251	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT

98.	Poomari	20/F	42061	Posterior	V	Reactive hyperplasia	Reactive Hyperplasia	Antibiotics.
99.	Shankar	20/M	42347	Posterior	V	Suppurative Lymphadenitis	Acute lymphadenitis	Antibiotics.
100	Saraswathy	50/F	42001	Posterior	V	Metastatic carcnomatous deposits	Schwannoma	excision.
101	Jeya	30/F	41830	Supraclavicular	V	Papillary carcinomatous deposits	Ca thyroid with secondaries neck	Total Thyroidectomy neck dissection
102	Chandra	48/F	40130	Anterior	IV	Bx. NHL	NHL	CHOP
103	Muthusamy	60/M	37744	Posterior	-	Sebaceous cyst	Sebaceous cyst	Excision.
104	Valliyammal	72/F	35845	Anterior Posterior	I, IV, V B/ L	Bx. NHL	NHL	CHOP
105	Kandhasamy	58/M	36851	Anterior Posterior	IV, V	Anaplastic carcinoma deposits	Bronchogenic carcinoma with secondaries neck.	CT & RT
106	Subbaya konar	75/M	35670	Submand	-	Lipoma	Lipoma	Excision.
107	Senthil kumar	20/M	35169	Anterior	II	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
108	Ayyappan	24/M	35148	Posterior	III, IV	Metastatic papillary carcinoma	Ca. Thyroid with secondaries neck	RT
109	Ponnayya	65/M	36158	Anterior Posterior	II, III, IV	Metastaitc carcinoma	Bronchogenic carcinoma with secondaries	RT + CT
110	Kaliraj	24/M	34316	Posterior	-	Lymph cyst	Lymph cyst	Excision.
111	Kannan	34/M	36991	Submand Anterior , Posterior	I, II, III	Reactive adenitis	AIDS related Lymphadenopathy	ART

112	Hakkim	38/M	44139	Supraclavicular	V	Metastatic Bronchogenic carcinoma	Bronchogenic carcinoma with secondaries neck	RT & CT
113	Petchiyammal	60/F	32927	Submand	I	Squamous cell carcinoma	Ca. cheek with secondaries neck	RT
114	Lakshmanan	35/M	43699	Submand	-	Lipoma	Lipoma	Excision.
115	Eswari	20/F	36139	Posterior	-	Lymph cyst	Lymph cyst	Excision
116	Saravanakumar	15/M	30114	Anterior	II, III	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
117	Irulappan	55/M	31243	Submand	II	Metastatic squamous cell carcinoma	Secondaries neck with unknown primary	RT
118	Ponrani	19/F	18134	Anterior	II	Granulomatous adenitis	Cold Abscess	ATT. Aspiration
119	Jeyakumar	25/M	37742	Submand Ant.	II, II, III	Lymphoma Bx, NHL	NHL	CHOP
120	Kumar	30/M	243130	Submand	II, I	Granulomatous adenitis	Tuberculous lymphadenitis	ATT
121	Ananth	23/M	25048	Anterior	II, III, IV	Hodgkin lymphoma	Hodgkin lymphoma	ABVD
122	Guruvammal	25/F	34333	Posterior	V	Granulomatous lymphadenitis	Cold abscess	ATT aspiration
123	Syedali	15/M	3244	Posterior	V	Granulomatous lymphadenitis	Tuberculous lymphadenitis	ATT
124	Avudaiyammal	35/F	33842	Anterior	II	Squamous cell carcinoma deposits	Secondaries neck with unknown primary	RT
125	Murugan	51/M	35563	Anterior	II	Squamous cell carcinoma deposits	Ca. larynx with secondaries neck	RT

Bx – Biopsy ; Ca – Carcinoma ; CT – Chemotherapy;RT - Radiotherapy

BIBLIOGRAPHY

1. Bailey and Love Short practice of Surgery, 24th Edition.
2. Sabiston Text book of Surgery 17th Edition.
3. Lee McGregor's Surgical Anatomy.
4. Skandalakis JE Surgical Anatomy.
5. Cuschieri – Textbook of Surgery.
6. Harrisons text book of internal medicine.
7. Prognostic factors of unknown head and neck squamous cell carcinoma.
Otolaryngology head and neck surgery -2008 sep.
8. Almost SC. Tuberculosis Patients of cervical lymphadenitis , Indian journal
of Tuberculosis Vol. 3,4,134, 1973
9. Place of FNAC in diagnosis of lymphadenopathy, R K Narang , S
Chaturvedi et al.
10. Lymphangiomas of the neck, Janes E Thompson et al, Annals of
surgery,1983.
11. Salivary gland tumours, Eveson J W and CawsonR A. Journal of Pathology.
12. Cervical node metastasis of occult origin, American journal of surgery,
Spiro R H .
13. Anandkumar H. Kanna Set. al. A comparative study of cytology Vs
Histopathological methods of Malignant Lymphadenopathies Vol. 56 May
1994 (Pp – 198 – 201)
14. Batsakis JG. Tumour of Head & Neck, Clinical and Pathological
considerations 2nd edition Williams & Welkins, Baltimose.

15. Berry JN Extra pulmonary Tuberculosis Journal of Indian Medicine Association 379 – 436 1971.
16. Danion J Hybles R. The Neck mass, General concepts & congenital causes 75 – 76 – 81 – 83, 93.
17. Danion J. Hybles R. The neck mass- inflammatory Neoplastic causes , Post graduate medicine 1987 Vol. 81 (Pp 97 – 103, 106 -7)
18. Daves J Sheldon GF, Surgery – A Problem solving Approach 2nd edition (pp. 1134)
19. Desa AE Tuberculosis of Lymph Glands. Text book of Tuberculosis Kothari Book Dept, 1st edition, 1972 (p. 558)
20. Doctor RG. Tuberculous lymphadenitis, Indian Journal of Medical Science 18: 41 – 1964
21. Gosh & et. at pattern of Tobacco Addiction on epidermoid carcinoma Oral cavity. Indian Journal of Surgery, vol. 54:8 1992 (Pp. 341-48)
22. Hermanck P. Sobin Lh. TNM Staging for oral cavity, pharynx, TNM classification of Malignant Tumors, New York, Springer veriaf 1987 (p14)
23. Hospital cancer Registry Annual Report 1991, Tata Memorial Hospital Bombay India (P24)
24. India KJ. Mukkirjee P. Chaula S. Calcification in Tuberculosis lymphadenitis. Journal of Indian Medial Association 34:10 1964 (P520)
25. Jaffee BF Neck Masses,Differential Diagnosis in Paediatric Otolaryngology Boston, little Brown 1975.

26. Marn (V. Rural, RCG, Williams, NS, Bailey & Love's short practice of Surgery 22nd Edition (pp 504, 523 -524)
27. Martin it Romieu, C. The Diagnostic significance of a lump in the neck, post graduate Medicine 1952 – 11 : 491 – 500.
28. Morries PJ Half RA Fried MP,Oxford Text book of Surgery, 2210 – 2219
29. Nair et al Indian Journal of Medicine, 1964 Randdive No. et al Thyroglossal cyst post graduate Medicine 1984, 30, 175.
30. Shanta V. et al Annual Report 1994 – Hospital board cancer Registry – Cancer Institute (WIA) Chennai (pp 13 – 15, 28)
31. Shanta V. Gajalakshmi (K. Annual Report 1994) Cancer Incidence or Mortality in Chennai – Cancer Institute (WIA) (PP – 8 -11 – 13 – 14, 33)
32. Shapsay SM, Oss off RH, Vaughan CW Jr. Sqammous cell cancer of the Head & Neck.
33. The otolaryngologic clinics of North America- August 1935 [P403 – 405]
34. Shaw HJ. Early Diagnosis of cancer in the Head & neck. British Medical Journal 6006 – 379 – 383.
35. Sreedhar R et al Thyroglossal cyst, Post graduate Medicine, Carcinoma Assessing in Branchial cyst, British Jorunal of Surgery 71 – 115.
36. Sestrunk WE- The Surgical Treatment of cysts of the Thyroglossal Tract, Ann. of Surgery 1965, 19 : 555.
37. SinKF. Ng A Norg J. Tuberculous Lymphadenopathy A. Review of Results of Surgical Treatment, Anst, NZ Journal of Surgery 1983 53 : 25

38. Solomon J Range troft L, Thyroglossal Duct cysts in children, Journal of Paediatric surgery 1984, 19:555.
39. Wyndir EL et al Tobacco & Alcohol consumption in relation to the development of Multiple primary cancers, Vol. 40,1977 PP (187 – 88)
40. Charlton G. Singh, B et al Metastatic carcinoma in the neck from occult primary lesion.
41. Chew F Shrteam B Nankervis – Carcinoma of Thyroglossal Duct – Case Reports of Hetiratine Review. Aust NZJ Surgey 63: 614 – 16 : 1993.
42. Crile GW. Excision of cancer of the Head & Neck JAMA vol. 47, 1980 :
43. Cuschieri A. Giles GR Moosa AR, AGD Maran – Essentials of Surgical Practice 3rd Edition 1995, pp 554 – 558 642 – 644.
44. Buckingham JM Lynn HB Branchial cleft cyst and sinuses in children, Mayoclinic pro 49:172, 1974.
45. Charlton G. Singh, B et al Metastatic Carcinoma in the Neck from an occult primary lesion.